

**National Park Service
U.S. Department of the Interior**

**Capulin Volcano National Monument
New Mexico**



FIRE MANAGEMENT PLAN

Environmental Assessment/Assessment of Effect

August 2004



Environmental Assessment / Assessment of Effect

FIRE MANAGEMENT PLAN

Capulin Volcano National Monument • New Mexico

Summary

The National Park Service (NPS) proposes the development of a wildland fire management plan for Capulin Volcano National Monument, New Mexico. The Fire Management Plan (FMP) would establish objectives for managing wildland fire; in addition to protecting life, property, and natural processes. The 792-acre National Monument is located in northeast New Mexico. Land around the Monument is rural and in private or State of New Mexico ownership.

Fire history data suggest a declining fire frequency by the late 1800s, as suppression activities interrupted natural fire cycles. Consequently, fuel loading and tree density have increased. Management intervention is needed to reduce the risk to life, property, and resources from wildland fire. Fire, as an ecological process, has been excluded from the Monument which has contributed to the decrease in species and habitat diversity.

Two alternatives are considered in this assessment. These alternatives are based on management goals and objectives; internal and external issues; guidance from existing park plans; agency and the 2001 Federal Fire Policy; the National Fire Plan; and other literature.

Alternative A (No Action) - Continues full suppression of all wildland fires, and reduces hazardous fuels in selected locations along the park boundary and around facilities.

Alternative B (NPS Preferred) - Implements a fire management plan with objectives for the suppression of wildland fire using appropriate management response; and restoration of ecological processes by thinning woody fuels and prescribed burning.

In Alternative B, fire management objectives are accomplished through a long-range treatment schedule (Appendix A.) In the five-year plan, 70 to 400 acres are treated annually with combinations of fuel thinning and prescribed fire projects. Fuel condition, weather, and funding are factors in the accomplishment of these targets. The treatment plan may be revised within the general framework of the fire management program. Any revisions that are not consistent with the overall program may require additional NEPA analysis. Measures to mitigate adverse effects on natural and cultural resources are proposed in the preferred alternative. These measures include the application of herbicides to prevent the spread of non-native plants, especially cheatgrass. Monitoring of fire effects, including the emergence of invasive plants, would occur after fire events. In addition to monitoring, the adaptive management approach taken with the fire management program would include ongoing consultation with stakeholders, and annual program reviews.

Public Comment

If you wish to comment on the environmental assessment, you may mail comments to the name and address below. This environmental assessment will be on public review for 30 days. The document will also be posted on the Internet site www.nps.gov/cavo. E-mail comments may be sent to superintendent_cavo@nps.gov. Please provide your name along with your e-mail message.

The names and addresses of people who comment will become part of the public record. **If you wish that your name and/or address be withheld, you must state this prominently at the beginning of your comment.** We will make all submissions from organizations, businesses, and individual representatives of organizations or businesses available for public inspection in their entirety.

Superintendent
Attn: Fire Management Plan/EA
Capulin Volcano National Monument
P.O. Box 40
Capulin, NM 88414



Location Map



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PURPOSE & NEED

Background and Mission

President Woodrow Wilson set Capulin Mountain aside as a National Monument by Proclamation No. 1340 on August 9, 1916 (39 Stat. 1792) to preserve "... *a striking example of recent extinct volcanoes...*" which "...*is of great scientific and especially geologic interest...*" Public Law 87-635, September 5, 1962, amended the proclamation to "... *preserve the scenic and scientific integrity of the Capulin Mountain National Monument ...*"

Public Law 100-225 (101 STAT. 1547), December 31, 1987, changed the name of Capulin Mountain National Monument to Capulin Volcano National Monument (NM) to emphasize the geologic significance of the area (NPS 1996.)

Capulin Volcano NM's 793 acres are located in northeastern New Mexico, approximately 30 miles east of Raton and 50 miles west of Clayton. Within a 13-mile radius is the town of Des Moines and the villages of Capulin and Folsom. The Monument is managed as a day-use natural area. Three single-family residences provide employee housing within the Monument, but there are no private in-holdings. Land adjacent to the Monument boundary is owned privately or by the State of New Mexico. Most of the private land is ranched, and the State Trust Land is leased for cattle grazing.

The vista from the top of Capulin Volcano is superb. The panoramic view includes the Raton-Clayton volcanic field and the distant, snow-capped Sangre de Cristo Mountains. From the highest point on the crater rim, visibility is up to 90 miles, and portions of four states (New Mexico, Texas, Oklahoma, and Colorado) can be seen.

Capulin Volcano was an important landmark for Native Americans, explorers, and pioneers. It was on a trade route connecting the Rio Grande Valley and the Great Plains. The route was used by the Pueblo Indians to access the Plains and by the Plains Indians such as the Comanche and Jicarilla Apache to access the Pueblo trade fairs. Spanish and other explorers also used the route. Coronado passed near the Volcano in 1541. It was a landmark on the Granda-Fort Union military road, and the Goodnight-Loving cattle trail (National Park Service 1996.)

The NPS Mission Statement for Capulin Volcano NM (NPS 2002) is:

Dedicated to protecting a classic cinder cone and its scientific integrity, Capulin Volcano National Monument ensures the opportunity to study, enjoy, and understand the powerful forces and dynamic processes that shape our world. The National Park Service will work in partnership to promote appreciation and protection of a shared land heritage in northeast New Mexico.

Purpose

The *purpose* of this Federal Action is to manage wildland fire at Capulin Volcano National Monument through the development of a long-range fire management plan (FMP.) The federal action (development of a FMP) would establish a program to protect Monument resources and

surrounding lands from wildland fire, reduce hazardous fuels, and re-introduce the role of fire (as prescribed burns) to achieve habitat restoration objectives. This document evaluates potential impacts to identified values resulting from implementation of those fire management strategies.

Need

The *need* for this Federal Action is evidenced by undesirable vegetation changes on Capulin Volcano over the past 85 years. The need for an FMP relates to fire's historical role in several Monument vegetative communities (Dick-Peddie 1993.) The use of fire is a tool for managing the geologic resources and achieving resource management objectives. Prescribed fire and mechanical thinning are ways to manage vegetation and control erosion on the slopes of the cinder cone.

For example, pre-settlement woodlands in this region were usually savanna-like or confined to rocky outcrops not typically susceptible to fire. Juniper woodlands began increasing in both density and distribution in the late 1800s because of climate, grazing, and lack of periodic fire as a result of suppression policies. Native American relocations also eliminated a source of ignition, and with fire exclusion, the juniper have been allowed to expand unchecked (National Park Service 2000.)

The early fires were frequent enough to keep the oldest trees restricted to steep, rocky, and/or dissected topography. The ability of vegetation to carry fire on gentler topography was due to the abundance of fine fuel, mainly grasses. When grazing was excessive, fire could no longer carry and perform its natural thinning function because fine fuels were consumed as food by livestock. Shrubs and then trees increased in abundance and density, with shrubs often serving as nurse plants for tree seedlings (National Park Service 2000.)

Research throughout the Southwest commonly accepts the application of prescribed fire for preparing seedbeds, controlling understory shrubs, thinning young tree stands, reducing fire hazards, and improving wildlife habitat. Without this management tool, increased accumulations of dead and down woody debris present managers with increased risk to life and property from unwanted wildland fires. Recent evidence of this trend includes the increased number of large destructive fires in the southwestern region. This trend also alerts managers that fire control has become an increasingly difficult and dangerous task. Other possible causes of high-severity wildland fires may be climate change, management practices, or both (Swetnam 1988.)

Proactive steps to mitigate threats from a growing fire hazard at Capulin Volcano National Monument, especially during drought and other high-severity periods, would be addressed in the proposed FMP.

Scope of the Plan

The FMP would encompass all NPS lands within Capulin Volcano National Monument. According to NPS Wildland Fire Management Policy (National Park Service 2000), the major components of the proposed plan include: management objectives, fire history and ecology, legal authorities, preparedness, organization, suppression, resource protection protocols, fire use, funding, and evaluation.

Generally, the FMP will undergo an annual review and update. The annual update will include a review of the Five-year Fuels Treatment Plan (Appendix A) that proposes fuels treatment projects over a five-year period. Any revision or update to the FMP and fuel treatment schedule would be consistent with program objectives and the alternative selected in the EA. If revisions are prompted by changes in environmental conditions, policy or law, additional NEPA compliance would be required to continue implementing the fire management program. Revisions that are inconsistent with the FMP/EA or result in new impacts not considered in the original FMP/EA would necessitate additional NEPA analyses, as well. In this way, the fire program incorporates an adaptive management approach into planning and implementation. Absent a programmatic agreement with the New Mexico State Historic Preservation Office or other controlling agencies, requisite consultation on resource impacts would be performed, project-by-project, to ensure ongoing compliance with specific laws such as the National Historic Preservation Act (NHPA.)

Fire History & Desired Future Conditions

Fire history is not well documented at Capulin Volcano. The only wildland fire recorded by the NPS was the Cable Fire, which burned 0.1 acre in 1981 (National Park Service 1996.) Information gathered by Gary Ahlstrand (1979) indicates that the average pre-grazing fire cycle (the time between naturally occurring fire events) was about 20 years based on a range of 6 to 34 years in the Lower Montane Coniferous Forest community. Interviews with area residents indicate that no major fires occurred on the Monument during the 20th Century (Gennaro, 1979.) Tree-ring analysis of fire-damaged ponderosa pine showed a minimum of five fires in the 19th century (Ahlstrand, 1979.)

One of the goals of the fire management program at Capulin Volcano is to achieve ecologically sustainable vegetative conditions by restoring a natural range of variability and bio-diversity. These desired future conditions are described for the two principal vegetation communities at Capulin Volcano. The two alternatives presented in this EA should be evaluated in light of their contributions to these desired conditions.

This environmental assessment describes two vegetative communities in detail. The Plains-Mesa Grassland and the Pinyon-Juniper Woodland communities comprise the majority of vegetation cover in the Monument. These two communities are representative of the vegetative resources potentially affected by fire and fire activities. The other plant communities were not described in detail because they cover a small portion of the Monument or do not easily support fire spread.

Three other vegetation types (Dick-Piddie, 1993) are represented at Capulin Volcano, including:

- Lower Montane Coniferous Forest – 4% [ponderosa pine (*Pinus ponderosa*), Colorado pinyon pine (*Pinus edulis*), Gambel's oak (*Quercus gambelii*)]
- Montane Scrub – 8% [mountain mahogany (*Cercocarpus montanus*), three-leaf sumac (*Rhus trilobata*), chokecherry (*Prunus virginiana*)]
- Juniper Savanna – 3% [one-seed juniper (*Juniperus monosperma*), blue grama (*Bouteloua gracilis*)]

Plains-Mesa Grassland

The Plains-Mesa Grassland vegetation community comprises approximately 200 acres in the Monument. It is dominated by blue grama (*Bouteloua gracilis*), little bluestem (*Schizachyrium scoparium*), bottlebrush squirreltail (*Sitanion hystrix*), sideoats grama (*Bouteloua curtipendula*), mountain muhly (*Muhlenbergia montana*), ring muhly (*Muhlenbergia torreyi*), Western wheatgrass (*Agropyron Smithii*), and other grasses. Plains grasslands in the Southwest have been considerably altered by livestock grazing and fire suppression, followed by shrub invasion (Brown, 1994.)

In grassland ecosystems such as this, fires may occur at any time of year provided the grass is cured and susceptible to burning. In the plains grasslands, mean fire return intervals range from 4 to 20 years, depending on climate and ignition sources. Fire in grasslands can burn over large areas until a break in terrain or a change in weather stops the fire (Paysen et al. 2000.)

Fire generally restores or regenerates grassland systems. The grassland community at Capulin Volcano may show improved productivity within three years following burning. The season in which fire occurs as well as subsequent grazing by wildlife may affect the productivity of different plant species. The response of these plant species following fire is also dependant on precipitation.

Frequent fire may prevent the expansion of woodland species into grasslands. This is based on the perception that periodic fires burned these grasslands often enough to kill tree seedlings when they were most susceptible to fire. In the absence of frequent fire, seedlings become established in the grassland, eventually converting it to a woodland or savanna community. The effectiveness of fire in restricting the spread of pinyon and juniper thus depends on fire frequency and intensity (Pieper and Wittie 1990.)

The invasive non-native species cheatgrass (*Bromus tectorum*) has gained small footholds in the Monument. Non-native plant species evolved elsewhere and were purposefully or accidentally transported and disseminated in North America (Li 1995.) Many invasive non-native species such as cheatgrass employ an ecological strategy of early season maturation and seed dispersal. It has been documented that summer burning, by either prescribed or wildland fire, may not contain the spread of this type of species, because seeds are already released and surface temperatures under fast-moving summer fires are not high enough to kill the seeds. Cheatgrass is also a strong competitor in the post-fire environment, where it takes advantage of increased resource availability and produces an abundant seed crop (Billings 1994.)

Desired future conditions for the Plains-Mesa grasslands would expand existing acreage and reclaim areas colonized by pinyon-juniper during the last 100+ years. Native grass species would dominate with occasional forbs and shrubs. Sufficient herbaceous ground cover would stabilize soils and carry fire at intervals of less than 20 years. Non-native species cover should steadily decline.

Pinyon-Juniper Woodland

The Pinyon-Juniper Woodland vegetation community covers approximately 523 acres—over 60% of the total Monument. It includes the entire cinder cone and much of the lava boca.

Elevation ranges from 7060 feet to 8182 feet. It is dominated by an overstory of Colorado pinyon pine (*Pinus edulis*) and one-seed juniper (*Juniperus monosperma*). Dominant shrubs include Gambel's oak (*Quercus gambelii*), mountain mahogany (*Cercocarpus montanus*), chokecherry (*Prunus virginiana*), and thimbleberry (*Rubus neomexicana*). Blue grama (*Bouteloua gracilis*) is the dominant grass in the understory. There are also some relatively open grassland interspaces in this community type. The presence of soil binding bunch grasses interspaced in the pinyon-juniper community is a more favorable condition for control of erosion on the cinder cone.

Pinyon-juniper woodlands can support stand-replacing fires, although pre-settlement fire regimes were likely a mixture of surface and crown fire with intensities and frequencies dependent on overstory continuity or density. Of 10 fire-scarred pinyon trees collected from 3 locations in New Mexico, multiple fire scars reflected a mean point fire return interval of 27.5 years, with a range from 10 to 49 years (Gottfried et al. 1995.) Other studies in New Mexico report surface fire return intervals of 20 to 30 years and stand-wide fires occurring at 15 to 20-year intervals. The variation in fire return intervals in pinyon-juniper woodlands is the result of differences in fuel loading and vegetation composition. Where herbaceous vegetation is sparse and unable to carry fire, fire-free intervals are much longer than in areas with a well-developed understory or greater tree density.

Shoestring root rot (*Armillaria* spp.) is responsible for expanding pockets of dead pinyon pines on the northeast slope of the volcano. Up to 100 acres have been affected, and over 430 trees have been killed, potentially adding greatly to fuel loading (National Park Service 1996.)

Desired future conditions for the pinyon-juniper woodland envision a savanna-like community that maximizes a diverse shrub and grass/forb understory. Major tree species would include both pinyon and juniper in varying proportions. Mature tree canopy coverage would average less than 15%, with herbaceous and/ or shrub ground cover sufficient to stabilize soils and carry fire at intervals of 10-15 years. These communities would typically be located on deeper and more productive soils sites where herbaceous cover can sustain frequent fires of sufficient intensity to maintain open stand structure.

More research is needed to understand the desired future conditions for the pinyon-juniper woodland community on the cinder cone. The shallower soils and steep slopes are disposed to woodland species. However, a diverse shrub and grass/forb understory is desirable to slow soil movement and erosion control. An expanded herbaceous understory and reduced canopy coverage is envisioned, but the extent has not been defined. Based on desired conditions in similar vegetation types at Bandelier National Monument, the canopy coverage would exceed 15% to 30%. The fire return interval would probably be greater than in the savanna-like areas, and could possibly exceed a 25 year interval.

Relevant Laws, Policies, and Planning Documents

A number of laws, regulations and policies influence development and implementation of a FMP for Capulin Volcano NM. The following relate directly to preparation of a FMP and supporting EA.

NPS Organic Act (1916) - Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (16 U.S.C.1.) Congress reiterated this mandate in the Redwood National Park Expansion Act of 1978 by stating that the NPS must conduct its actions in a manner that will ensure no “derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress” (16 U.S.C.1 § 1 a-1.)

National Environmental Policy Act (NEPA) - The purpose of NEPA is to encourage productive and harmony between man and the environment; to promote efforts that would prevent or eliminate damage to the environment and stimulate the health and welfare of mankind; and to enrich the understanding of the ecological systems and natural resources important to the Nation. The procedural requirements associated with NEPA are satisfied by documentation of categorical exclusions, memoranda to files, or completion of an EA or Environmental Impact Statement with a final decision document. (42 U.S.C. 4321 et seq.)

National Historic Preservation Act (NHPA) - This federal legislation provides for the identification and protection of historic sites and structures. (16 U.S.C. 470 § 106.)

Director’s Order-12 (DO-12) – Agency guidance for *Conservation Planning, Environmental Impact Analysis, and Decision Making* is contained in DO-12. The NPS guideline for implementing NEPA meets all Council on Environmental Quality (CEQ) regulations, and in some cases, the guideline exceeds the CEQ regulations.

Director’s Order-18 (DO-18) - The NPS guidance for *Wildland Fire Management*, states that “every NPS unit with burnable vegetation must have an approved Fire Management Plan.” DO-18 lines out the content of an approved FMP. The guidance stresses “firefighter and public safety” and promotes “managing fires on an ecosystem basis and across agency boundaries.” Parks are directed to identify, manage, and reduce, where appropriate, accumulations of hazardous fuels. Until an FMP is approved, NPS units must take aggressive suppression action on all wildland fires.

The *Federal Wildland Fire Management Policy and Program Review (2001)* and *Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide (1998)* provide specific guidance on fire policy, planning and implementation. By policy FMPs recognize the full range of management actions to accomplish protection and resource management objectives. The policy states:

Fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, across agency boundaries, and will be based upon best available science. All use of fire for resource management requires a formal prescription. Management actions taken on wildland fires will be consistent with approved fire management plans.

An FMP/EA for Capulin Volcano National Monument must be consistent with other approved plans for the unit. An FMP and EA were prepared and approved in 1979 by the NPS, Santa Fe, New Mexico, but are now outdated. A draft Statement for Management for Capulin Volcano National Monument was prepared in 1989, but it did not address fire management. Environmental compliance was never completed for a draft FMP in 1996, and therefore the plan was never approved or implemented.

Objectives

An interdisciplinary planning team derived the fire management objectives from resource goals and objectives found in planning documents for Capulin Volcano National Monument.

Objective: *Emphasize firefighter and public safety on every project and in every activity.*

Objective: *Suppress all wildland fires commensurate with values to be protected and costs.*

Objective: *Develop and implement a treatment schedule to:*

- *reduce the potential for high-severity fires and create defensible space around at-risk buildings, physical facilities, and park boundaries...*
- *reduce the potential for high-severity fires and create defensible space around identified at-risk cultural resources...*
- *reduce the potential for high-severity fires that threaten the integrity of the cinder cone and natural resource values.*

Objective: *Develop management response capabilities and protocols that minimize resource damage and rehabilitation costs.*

Objective: *Attain the benefits of fire in the shortgrass prairie community to sustain habitat diversity, and safely apply restoration treatments according to an approved schedule.*

Objective: *Achieve the benefits of fire in the pinyon-juniper woodland to sustain habitat diversity and minimize erosion, and safely apply restoration treatments as directed by an approved schedule.*

Objective: *Contain the introduction and spread of non-native species that result from fire management activities.*

Objective: *Develop cooperative agreements and relationships to facilitate timely and effective mutual assistance and collaborative projects.*

Objective: *Involve adjacent landowners in park fire management activities where possible.*

Objective: *Inform the public of fire management activities and foster awareness of the role and benefits of fire.*

Objective: Manage fire operations in compliance with regulations and guidelines for air-quality standards, cultural and natural resources, and agency policies.

Scoping Issues & Impact Topics

An interdisciplinary team met in November 2002 to outline a work plan for the development of the FMP/EA. During this internal scoping meeting, the team identified objectives, issues, impact topics, possible alternatives, and discussed a public involvement strategy. The nine member team included NPS managers and staff specialists in cultural and natural resources, and fire management.

Public scoping for preparation of the FMP/EA included a newsletter distributed in January, 2003, and a public open house at the Monument on February 1, 2003. The newsletter was mailed to over 300 individuals, organizations, tribes, and government agencies. Over 25 people attended the public meeting. Written comment on issues, impact topics, and proposed alternatives were requested by March 2, 2003.

As work continued on the environmental assessment, an issue arose that was not presented to the public during the initial scoping phase. The application of herbicides was suggested as an effective way to control invasive plants, specifically cheatgrass that might become established after a wildland or prescribed fire. On August 15, 2003, another letter was mailed to the same 300 addresses, which asked for comments on the addition of herbicide use to the preferred alternative. Of five comments received, four supported the management of invasive plants with herbicides. The organization, Carson Forest Watch, did not recommend herbicide use. The issues they raised were considered during the development of Alternative B and addressed in the impact assessment section.

Issues and concerns voiced by the public were distilled into impact topics. These topics facilitate the analysis of environmental consequences and allow for the systematic comparison of the two alternatives.

Issues

1. The erosion potential from wildland fires on the volcano may be high.
2. Small business contracts and job creation are important local economic issues and should be considered.
3. There are several exotic species: mullein, sweet clovers, cheatgrass, and Russian thistle in the Monument. Depending on how fire management actions are implemented, such actions may favor the proliferation exotic species.
4. Cultural resources, including certain plants important to the Jicarilla Apache Tribe should be protected to the degree practicable.
5. Potential for high-severity fires may exist during drought years.
6. Wildland fires should be prevented from leaving or entering parklands as much as possible.

7. Fire may result in damage to or mortality of remaining old-growth trees (greater than 12-inch-diameter breast height) on the Monument.
8. Management should recognize the crater as a significant and sensitive area.
9. Issues related to herbicide use included: use of integrated pest management techniques; seeding with native plants; adverse effects on wildlife, including insects; runoff potential from applications on steep slopes; and public health protection, notification, and education.

Impact Topics

Based on the issues and concerns stated above, the resources and values that could potentially be at stake in selecting various future directions for the park were identified in the list of impact topics.

- Geology and soils
- Vegetation
- Wildlife
- Air quality
- Cultural resources
- Human health and safety
- Socioeconomics
- Cooperative relationships

Issues & Impact Topics Considered but Not Further Addressed

NEPA and Council on Economic Quality (CEQ) regulations direct agencies to “avoid useless bulk...and concentrate effort and attention on important issues” (40 CFR 1502.15). Certain impact topics that are sometimes addressed in NEPA documents for other kinds of proposed actions or projects have been judged not to be substantively affected by any of the FMP alternatives considered in this EA. These topics are listed below and summarized in Table 1. The rationale for dismissing specific topics from further consideration also is given.

Issue: Biomass generation potential from fuels reduction projects on the Monument was raised as an opportunity. The park explained that the amount of wood that would be available was too small for any long-term sustainable supply, and therefore, this was not included in the analysis.

Impact Topic: Wetlands and Floodplains

Executive Order 11990, Protection of Wetlands, requires federal agencies to avoid, where possible, impacts on wetlands. There are no jurisdictional wetlands within or near the project area; therefore, the topic of wetlands has been dismissed from further analysis, and a Statement of Findings for wetlands will not be prepared.

Executive Order 11988, Floodplain Management, requires all federal agencies to avoid construction within the 100-year floodplain unless no other practical alternative exists. Certain

construction within a 100-year floodplain requires preparation of a Statement of Findings. There are no 100-year floodplains within the project area; therefore, floodplain was dismissed as an impact topic, and a Statement of Findings for floodplains will not be prepared.

Impact Topic: Special Status Species

The Endangered Species Act (1973) requires an examination of impacts on all federally listed threatened or endangered species. NPS policy also requires examination of the impacts on federal candidate species as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species.

According to a threatened and endangered species study at Capulin Volcano NM (Parmenter et al. 1998,) special status species do not occur at the Monument. Therefore, this topic was dismissed from further analysis.

Impact Topic: Water Resources

NPS policies require protection of water quality consistent with the Clean Water Act (1977,) a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters and to prevent, control, and abate water pollution. Groundwater does not occur near the surface, and there are no principal streams, lakes, or impoundments of water within the Monument boundaries. Therefore, this topic was dismissed from further analysis.

Impact Topic: Environmental Justice

Federal actions to address environmental justice [Executive Order (EO) 12898] in minority and low-income populations include identifying any effects of the proposed action on these components. The interdisciplinary team has determined that none of the alternatives in this EA would result in significant direct or indirect effects on any minority or low-income populations.

The proposed action would not have disproportionate health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Draft Environmental Justice Guidance (July 1996.) Therefore, environmental justice was not addressed.

Impact Topic: Noise

Noise is defined as an unwanted sound. Hazard fuels reduction, hazard tree removal, prescribed fires, and fire suppression all involve the use of noise-generating equipment such as chainsaws, trucks, and aircraft. Each of these fire management tools, especially operating saws and helicopters, are quite loud (in excess of 100 decibels,) and operators are directed to use hearing protection equipment. The use of such equipment would be infrequent when considered in terms of hours or days per decade. This is not enough to substantively interfere with human activities or wildlife behavior. Such infrequent noise would not chronically impair the solitude and tranquility associated with the Monument. Therefore, this topic is dismissed from analysis.

Impact Topic: Transportation

None of the FMP alternatives would substantively affect road, railroad, or aerial transportation in and around the Monument. There may be temporary closure of nearby roads during fire

suppression or prescribed burning activities. However, as evidenced by fire history, such closures would be very infrequent and would not substantially impinge on local transportation. Whenever possible, prescribed fire would be scheduled for times when traffic is light. Therefore, this impact topic is dismissed from further analysis.

Impact Topic: Utilities

None of the FMP alternatives or the proposed projects would cause any measurable effects to infrastructure (telephones, water, sewer, power.) Therefore, this impact topic is not addressed.

Impact Topic: Land Use

Vegetation at Capulin Volcano National Monument consists primarily of grassland and pinyon-juniper woodland communities. Visitor and administrative facilities, as well as historic structures and cultural landscapes, are located within the Monument. Residential, agricultural, and commercial land uses occur in small towns and ranches outside the boundaries. Fire management would not affect land uses within or around the Monument. Therefore, this impact topic is dismissed from further analysis.

Impact Topic: Wilderness

NPS *Management Policies* direct that proposed actions which have the potential to impact wilderness resources must be evaluated in accordance with agency NEPA procedures. Since neither Capulin Volcano National Monument nor adjacent lands are proposed or designated as wilderness, this impact topic is dismissed from further analysis.

Impact Topic: Prime and Unique Farmlands

In August, 1980, the Council on Environmental Quality (CEQ) directed federal agencies to assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) as prime or unique. According to the NRCS, no soils in the project area are classified as prime and unique farmlands. Thus, the impact topic of prime and unique farmland is not addressed.

Table 1: Summary of Impact Topics Retained or Dismissed

| Impact Topic | Retained or Dismissed from Further Evaluation | Relevant Laws, Regulations, or Policies |
|------------------------|--|---|
| Geology & Soils | Retained | NPS Organic Act; NPS <i>Management Policies</i> |
| Vegetation | Retained | NPS Organic Act; NPS <i>Management Policies</i> |
| Wildlife | Retained | NPS Organic Act; NPS <i>Management Policies</i> |
| Air Quality | Retained | Clean Air Act (CAA); CAA Amendments of 1990; NPS Organic Act; NPS <i>Management Policies</i> |
| Cultural Resources | Archeological sites, historic buildings, structures, cultural landscapes, and traditional cultural values retained Museum objects dismissed | Section 106 of National Historic Preservation Act; Archeological and Historic Preservation Act; Archeological Resources Protection Act; 36 CFR 800; NEPA; Executive Order 13007; Executive Order 11593; the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement Among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers ((1995); Director's Order 28; NPS <i>Management Policies</i> |
| Human Health & Safety | Retained | Director's Order #18; NPS <i>Management Policies</i> |
| Socioeconomics | Retained | 40 CFR Regulations for Implementing NEPA; NPS <i>Management Policies</i> |
| Coop Relationships | Retained | NPS <i>Management Policies</i> |
| Floodplains & Wetlands | Dismissed | Executive Order 11988; Executive Order 11990; Rivers and Harbors Act; Clean Water Act; NPS Organic Act; NPS <i>Management Policies</i> |
| Special Status Species | Dismissed | Endangered Species Act; NPS Organic Act; NPS <i>Management Policies</i> . |
| Water Resources | Dismissed | Clean Water Act; Executive Order 12088; NPS <i>Management Policies</i> |
| Environmental Justice | Dismissed | Executive Order 12898 |
| Noise | Dismissed | NPS <i>Management Policies</i> |
| Transportation | Dismissed | NPS <i>Management Policies</i> |
| Utilities | Dismissed | NPS <i>Management Policies</i> |
| Land Use | Dismissed | NPS <i>Management Policies</i> |
| Wilderness | Dismissed | The Wilderness Act; Director's Order #41; NPS <i>Management Policies</i> |
| Prime/Unique Farmlands | Dismissed | Council on Env. Quality 1980 memorandum |

ALTERNATIVES CONSIDERED

Overview

Two alternatives were framed through discussions between Capulin Volcano National Monument, the Fire Management Office at Lake Meredith National Recreation Area, and the NPS Intermountain Region. Each alternative addresses specific management objectives and are feasible for local implementation. Alternatives that did not meet the criteria were eliminated from further analysis. Those alternatives dismissed from further analysis are briefly described later in this section. In compliance with NEPA, this EA evaluates the potential effects of alternative fire management strategies at Capulin Volcano National Monument.

In both alternatives, the Monument would be considered a single Fire Management Unit (FMU.) Within this FMU, fire management activities may occur throughout the Monument or be concentrated in certain areas. For example, prescribed burning would occur on grassland areas and forest vegetation, and hazard fuels reduction projects would be conducted mainly in forested areas. The containment of invasive plants following fire would be focused on grassland areas, but not restricted to those areas.

ALTERNATIVE A (No Action). *Continue full suppression and conduct individual projects using manual fuels management to meet objectives.*

Without an approved FMP, all wildland fires would receive a full and aggressive suppression response commensurate with values to be protected and human safety. A qualified incident commander would carefully evaluate firefighter safety before deciding to send fire crews into areas with heavy vegetation and steep slopes, especially during severe fire seasons. Firefighters with hand tools, and in some situations with mechanized equipment, would be rapidly assigned to suppress all fires. The full suppression strategy would include fire line construction using hand tools, chainsaws, and helicopter water drops. Because of steep slopes and unstable soils, the use of retardants and dozers would require the superintendent's approval, in situations when life or identified values are threatened by wildland fire.

Under the no-action alternative, reduction of hazard fuels would occur where there is risk of damage or loss in developed areas, around facilities, and along the Monument boundary. Hand tools would be used along with chainsaws to cut, lop, thin, and trim vegetation. Woody debris would be removed to a designated and approved site, such as a landfill, used for maintenance projects, or let bid as firewood. Without an approved FMP, no prescribed fires would be employed to treat fuels or consume debris unless appropriate NEPA compliance was completed for individual projects.

Mitigation as Part of Alternative A

This list of mitigation measures was designed to protect resources from the adverse effects of suppression activities. Some measures would be implemented on every suppression action. Other

measures, however, would be applied on a case-by-case basis depending on fire behavior factors, such as: the location, size, intensity and rate of spread, as well as resources to be protected.

- Use minimum-impact suppression tactics where possible.
- Locate, identify, and isolate sites that are vulnerable to fire effects or suppression actions.
- Educate fire crews about the need to protect cultural resources.
- Use other on-site measures to protect cultural sites and features as necessary.
- Use water as much as possible rather than construction of hand line to contain unplanned wildland fires to minimize the potential of disturbing cultural resources.
- Blackline (burnout fuels) around structures or features near wildland fires, treat structures with fire retardant foam concurrent with fires, wrap structures with heat reflective materials, and establish sprinkler systems on and around structures concurrent with wildland fire suppression activities.
- Monitor fire suppression activities and halt work if previously unknown resources are located; protect and record newly discovered resources.
- Use retardants approved by the U.S. Forest Service and Bureau of Land Management only with authorization from the Superintendent or designee.
- Use motorized equipment such as all-terrain vehicles and wildland engines only with authorization from the Superintendent or designated representative.
- Designate a resource advisor to assist with suppression operations; if qualified employees are not available, a Resource Advisor would be ordered through the interagency dispatch system.
- Re-contour and water-bar firelines following fire suppression activities.
- Avoid re-seeding burned areas unless there are overriding concerns about establishment of invasive non-native species; any reseeding would use native species and occur only with the Superintendent's approval.
- Contact tribal government officials in advance of project work and during unplanned wildland fire incidents.

Wildland fire management and fuel management programs have some level of inherent risk to both firefighters and the public. Potential risks to firefighter and public safety would be reduced or eliminated by the following mitigation measures:

- Adhere to the 10 Standard Firefighting Orders.
- Being aware of potential Watch Out Situations.
- Employ LCES (**L**ookouts, **C**ommunications, **E**scape Routes, **S**afety Zones; this is risk mitigation firefighters commonly use).
- Complete risk analyses.
- Impose temporary closures.
- Distribute informational fliers to park staff and visitors, including information on temporary closures.

ALTERNATIVE B. *Implement a fire management plan that includes suppression of fires using appropriate management response and management of fuels using a full range of strategies, including mechanical and manual, and prescribed fire to meet objectives.*

The approval of a FMP for Capulin Volcano National Monument would implement activities intended to restore native ecosystem processes, perpetuate native bio-diversity, and sustain the natural and human environment. The main components of the fire management program contained in the proposed FMP are described in the following sections.

Appropriate Management Response (AMR)

Each fire start would be evaluated to determine what suppression actions are appropriate. Actions that could potentially be considered include suppression using direct fireline, and suppression using natural containment boundaries. In this alternative, natural ignitions would not be allowed to burn, even if conditions met pre-stated resource management objectives.

Suppression

Under an approved FMP, all wildland fires would be suppressed using AMR. Response to specific wildland fires would be based on fire behavior, values at risk, human safety, and suppression costs. AMR options range from the use of minimum impact tactics that limit ground disturbance to intense suppression actions on all perimeters of the fire. For example, if a fire threatened resource values or showed potential to cross Monument boundaries, a prompt and aggressive suppression action, similar to Alternative A, would be taken to minimize the threats and cost. However, under Alternative B, the manager has the discretion to use natural barriers (i.e., rock outcroppings and breaks in vegetation) and human-made features such as roads and trails, to control wildland fire, as well as minimize the disturbance to vegetation and soils. The FMP would establish minimum impact criteria and identify specific situations when resource advisors were designated and consulted.

Mechanical & Manual Fuels Management

Thinning projects would be listed on a treatment schedule and approved by NPS resource advisors and park superintendent. Project objectives would establish defensible space, prevent wildland fires from crossing Monument boundaries, and accomplish specific ecological restoration objectives. Woody material would be thinned to increase species diversity and expand areas of native grasses and forbs. To increase herbaceous cover on the cinder cone, the overstory canopy in the pinyon-juniper community would be opened. Small areas of canopy would be opened and monitored for the emergence of grasses and shrubs. Fewer than 10 trees per acre would be thinned. Pinyon and juniper trees with a 9-inch or greater diameter would not be removed. Branches on these trees would be limbed no higher than four feet above ground. Any ponderosa trees in the project zone with a 4-inch or greater diameter would not be removed and would be limbed-up no higher than four feet above ground. Some trees will be flagged and left and some vegetation stands, such as mountain mahogany, would be flagged as no cut areas. Trees to be thinned, trimmed, or removed would be identified by the NPS.

This strategy includes the use of mechanical equipment (tracked or wheeled mulchers, spreaders, cutters and grapples) where road access exists; and/or manual (hand-carried) tools such as

handsaws, chainsaws, axes, scraping tools, in off-road areas around and on the cinder cone. For purposes of this analysis, chainsaws are considered “manual tools.”

All cut material would be stacked and burned in open areas when conditions allow. Woody material thinned from slopes of the cinder cone would be removed in a manner to minimize surface disturbance. It may be desirable to burn slash piles on the volcano rather than increase disturbance by dragging material down the steep loose slopes. In selected locations, where access routes are available or burning is not possible, the debris would be removed and used for Monument projects, put up for bid as firewood, or used as goods-for-services payment for treatment activities.

Prescribed Fire

Management-ignited prescribed fires under a 5-year treatment schedule would restore the natural role of fire and manage fuels that contribute to the wildland fire threat. The reestablishment of fire would facilitate the restoration of native fire-adapted communities, control exotic vegetation, and maintain desired ecological conditions. All prescribed fire projects would require an approved burn plan that outlined the management objectives, prescription, resources to be used, contingencies, and mitigation required (NPS DO-18.)

In the first 5-year treatment schedule, prescribed fires would generally be used in grassland areas around the base of the cinder cone. On the cinder cone, prescribed fire would occur in subsequent years after woody fuel cover is thinned, and the potential for extreme fire behavior is reduced.

Herbicide Use

Herbicides would be used to control and/or limit the establishment of cheatgrass, *Bromus tectorum*, following the use of prescribed fire. Cheatgrass, a cool season annual grass, emerges in the fall, winter, or early spring depending on moisture regime. The use of two chemicals, imazapic, trade name Plateau®, or glyphosate, trade name Roundup®, are effective on cheatgrass, and would reduce proliferation throughout the Monument. Imazapic can be used as a pre-emergent or post-emergent, applied to bare ground prior to seed germination and foliar growth or applied to the foliage after the plant has emerged. Ideally, imazapic, a selective herbicide, would be used directly on the cheatgrass foliage. Glyphosate is a nonselective herbicide and would be applied after emergence in the fall or spring. Glyphosate would be applied to monoculture stands of cheatgrass after which reseeding or revegetation would occur.

Treatment would occur in the spring or fall, depending on the herbicide used. If cheatgrass becomes intermixed with native grass, Plateau® herbicide would be applied in the fall. Plateau® does not destroy native grasses and would be most effective in this instance. If monocultures of cheatgrass develop, Roundup® herbicide would be used.

An early spring burn is most desirable. The area would be monitored, after the fire and during the cool growing season, for cheatgrass emergence and density. After determining these parameters, an herbicide would be selected and applied before the plants reached the four-leaf stage. During the rest of the year, monitoring of the burn site would continue so that the effectiveness of management actions would be evaluated and information gathered for future prescribed fire events.

Adaptive Management & Fire Monitoring

Adaptive management would guide fire activities under an approved FMP. Adaptive management would implement deliberate measurable actions that would be monitored to determine if the conditions produced are favorable, sustainable, and maintain or improve ecosystem health. Management decisions and strategies would be adjusted in response to new information, knowledge or technology. An action or implementation plan would articulate the goals, objectives, and strategies for a given project.

Monitoring of fires, including wildland as well as prescribed fires, would involve the systematic collecting and recording of data on fuels, topography, weather, air quality, and fire behavior. The *NPS Fire Monitoring Handbook* outlines the protocols that would be used. Monitoring would be conducted by the Fire Effects Monitoring/Fire Ecology Program from Bandelier National Monument, New Mexico. Fire monitors would be trained and certified in both basic fire behavior and prescribed fire monitoring techniques. Monitoring results would determine whether actions had the desired effect, whether more information is needed, and whether modification would be needed to meet management goals and objectives.

Public Information & Education

The National Park Service is committed to informing and educating the public about fire management activities, including fuel treatment plans, wildfire prevention, mitigation and rehabilitation, and fire's role in ecosystem management. The information and education programs would address a variety of audiences, and increase support for fire management activities. The fire information and education program at Bandelier National Monument would serve as a model for the communications program at Capulin Volcano. Objectives would be designed to:

- provide education on fire management and fire ecology;
- promote relationships between agencies, community groups, and interested non-governmental partners;
- provide accurate and timely incident information for local, regional, and national fire operations; and
- inform local communities, Monument residents and employees, about fire safety, fire prevention, defensible space, and fuels management.

Mitigation as Part of Alternative B

Soils

- Actions designed to re-cover fire lines and other bare mineral soils to prevent erosion would be identified in a rehabilitation plan.
- Planning would involve prescriptions where low-intensity, short-duration fire is desirable.
- The burn plan would include locating control lines that ensure minimum soil exposure, and would ensure that the organic layer would remain following burning.
- Pile burns would be avoided in locations where soils may be vulnerable to sterilization.

- Removal of trees thinned from slopes of the cinder cone would be done in a manner to minimize surface disturbance. It may be desirable to burn slash piles on the volcano rather than increase disturbance by dragging material down the steep loose slopes.
- Ground disturbance, especially on the steep volcanic slopes, would be minimized wherever possible.
- Soil moisture should be high enough to ensure that an organic layer would remain following burning.
- Targeted areas for herbicide treatment would be less than 2 acres each.

Vegetation & Wildlife

- Utilize minimum-impact suppression tactics (National Park Service 2003) on all incidents.
- Natural resource specialists would be consulted on proposed locations of management actions that may remove or disturb native vegetation/habitat.
- Natural resource specialists would be consulted on proposed locations of management actions that may disturb habitats for the Pale Townsend's Big-eared bat (*Plecotus townsendii pallescens*) and Capulin Alberta butterfly (*Oeneis alberta capulinensis*).
- The known effects of fire and non-fire treatment on limited/sensitive species habitat would be considered in mitigation planning.
- The application of herbicides would follow NPS Integrated Pest Management (IPM) guidelines which require employee training, application under specific manufacturer's direction, and follow-up monitoring of effects.
- Consult with a vegetation management specialist to consider the effects of fire on existing weed species or potential for weed introductions.
- Before any native ecosystems are disturbed (as with prescribed burning), identify the exotic species likely to invade the disturbed areas
- Determine measures to minimize disturbance and contain the spread of invasive species.

Air Quality

- Reduce fuels available for combustion by removal and use of head-fire ignition with the wind wherever practical.
- Burn at higher fuel moisture of the large fuels (i.e., logs, branches); combine this technique with burning at lower fine fuel moisture (i.e., needles, leaves, grasses.)
- Use mop-up actions on larger fuels to reduce duration of smoke impacts.
- Reduce particulate emissions for the fuel consumed by reducing the time period of the smoldering phase; encourage flaming combustion to the extent possible.
- Avoid smoke-sensitive areas, such as highways during heavier traffic periods (i.e., weekends, holidays.)
- Avoid burning near smoke-sensitive areas when there are strong inversions or very stable high-pressure systems are in place.

Cultural Resources

- Use minimum-impact management tactics on all incidents and project work.
- Locate, identify, and isolate sites that are vulnerable to fire effects or human activities.
- Remove fuels that cause long-duration heating, particularly in areas of heavy down/dead fuels.
- Educate fire crews about the need to protect cultural resources.
- Use other on-site measures to protect cultural sites and features as necessary.
- Avoid prescribed fires near cultural and other sensitive resources unless adequate planning and mitigation has assured their protection.
- Use water as much as possible rather than construction of hand line to contain unplanned wildland fires to minimize the potential of disturbing archeological sites.
- Consider including black-lining around structures or features near wildland fires, treating structures with fire retardant foam, wrapping structures with heat reflective materials, and establishing sprinkler systems on and around structures concurrent with wildland fire suppression activities.
- Use retardants approved by the U.S. Forest Service and Bureau of Land Management only as authorized by the Superintendent or designee.
- Use off-road motorized equipment such as all-terrain vehicles and wildland fire engines only as authorized by the Superintendent or designated representative.
- Designate a resource advisor to assist suppression operations; if qualified employees are not available, a Resource Advisor would be ordered through the interagency dispatch system.
- Continue consultations with American Indians to protect resources valued by the tribes.
- In the event that cultural resources are discovered during suppression or treatment activities, work would be halted in the vicinity of the resource, and procedures outlined in 36 CFR 800 would be followed.

Health & Safety

- Mitigation for Alternative A would apply, along with;
- Temporary signs posted at herbicide application sites and in the Visitor Center.

Cooperative Relationships

- Maintaining communications with area residents is an important mitigating factor in fire management planning and operations. Newsletters, press releases, meetings, and interpretive messages would be designed to keep neighbors informed and involved.

Alternatives Considered But Dismissed

Alternative: Grazing domestic animal as a strategy to meet fire management objectives.

Grazing has not been allowed in the Monument since 1978. Under agency policy, livestock grazing is allowed only when specifically authorized by the enabling legislation or required when there is a reserved right-of-use resulting from land acquisition. Administrative and permit costs would be prohibitive in relation to the results expected from this strategy. The acreage where grazing would be applied is limited. The potential displacement of wildlife species is an additional concern. Moreover, grazing would not be consistent with Monument fuel reduction and restoration objectives. Therefore, this alternative was dismissed from further analysis.

Alternative: Full suppression, fuels management using hand methods only to meet objectives.

Although this strategy is appropriate under certain circumstances where machinery use would not be feasible, it does not allow for prescribed fire (broadcast or pile burning) to be used for debris consumption or as a tool to accomplish restoration objectives. Those areas of the Monument in which fire-adapted habitats are known to exist (for example, the short-grass prairie community) and that are perpetuated by fire would continue to decline in vigor and diversity. The exclusion of fire that could restore and maintain these systems is contrary to strategies intended to achieve desired vegetative conditions and is inconsistent with NPS policy. Therefore, this alternative was dismissed from further analysis.

Alternative: Allow natural ignitions to burn.

The so-called “no management” or “let burn” alternative would allow wildland fires to burn to achieve pre-determined resource management objectives. A few comments received during the public scoping phase suggested support for this strategy. To safely implement this alternative at Capulin Volcano, additional staff and resources would be needed, and additional funds are unlikely. This alternative was dismissed from analysis because it is not feasible for local implementation, and would pose an undue risk to resources and the public.

Table 2: How Each Alternative Addresses Objectives

| Objective | <u>Alternative A (No Action)</u> | <u>Alternative B (NPS Preferred)</u> |
|---|---|---|
| Emphasize firefighter and public safety in every activity. | Removal of hazard fuels around structures would decrease the threat to visitors, park neighbors, facilities, and employees, but the potential for wildland fire would continue to be high. All standard fire protection safety measures would be followed during suppression actions. | Prescribed fire combined with mechanical removal of hazardous fuels would reduce fuel loads to a greater degree than Alternative A and the potential for high severity fire. In addition to use of standard fire safety measures, the risk to visitors, neighbors, facilities, and employees would be reduced by appropriate management response strategies. |
| Suppress all wildland fires commensurate with values to be protected and costs. | All wildland fires would be aggressively suppressed to protect values at risk. | Wildland fires would receive an appropriate management response commensurate to protection of park values and suppression costs. |
| <p>Develop and implement a treatment schedule to:</p> <ul style="list-style-type: none"> • reduce the potential for high-severity fires and create defensible space around at-risk buildings... • reduce the potential for high-severity fires and create defensible space around at-risk cultural resources... • reduce the potential for high-severity fires that threaten the integrity of the cinder cone and natural resource values. | <p>No treatment schedule would be developed. Thinning projects would be limited. NEPA requirements would be considered on a case-by-case basis. Defensible space would be created around facilities and along the boundary.</p> <p>Vegetation on the cinder cone and outside developed areas would continue to build up and the potential for high-severity fire could adversely affect natural and cultural resources.</p> | <p>Under a proposed treatment schedule contained in an FMP, the completion of thinning projects and prescribed fires would reduce potential for high-severity wildland fires. The creation of defensible space would be met as in Alternative A.</p> <p>Prescribed burning and mechanical reduction of hazardous fuels would protect natural and cultural resources from exposure to unusually intense fires.</p> |
| Develop management response capabilities and protocols that minimize resource damage and rehabilitation costs. | Does not meet the objective. All wildland fires would be aggressively suppressed. | Appropriate management response contains options for use of natural and human-made barriers and other actions that would minimize resource damage and reduce costs of rehabilitation. |
| Attain the benefits of fire in the shortgrass prairie community to sustain habitat diversity and safely apply restoration treatments according to an approved schedule. | There would be no substantial benefit or restoration of an ecological process to the shortgrass prairie community from this alternative. | Implementation of prescribed fire would restore a missing ecological process in the short-grass prairie community, non-native plant cover would be reduced and habitat improved. |

| Objective | <u>Alternative A (No Action)</u> | <u>Alternative B (NPS Preferred)</u> |
|--|---|---|
| Achieve the benefits of fire in the pinyon-juniper woodland and safely apply restoration treatments as directed by an approved schedule. | This alternative would not restore fire as an ecological process in fire-adapted communities. | Mechanical thinning would replicate the thinning action of wildland fire. Implementation of prescribed fire would restore a missing ecological process in fire adapted vegetation communities. |
| Contain the introduction and spread of non-native species that result from fire management activities. | Rehabilitation and mitigation after a wildland fire would include measures to control invasive plants. | In addition to the mitigation that would occur after a wildland fire, the preferred alternative provides for the application of herbicides as an additional tool in the efforts to contain exotic plants. |
| Develop coop. agreements and relationships to facilitate timely and effective mutual assistance and collaborative projects. | Mutual aid cooperation for wildland fire suppression would partially meet this objective. | In addition to coop. agreements for mutual aid and fire suppression, management would work with private and state landowners on joint projects. |
| Involve adjacent landowners in park fire management activities where possible. | Without an FMP, direction and funding would not be available to accomplish this objective. | The adaptive management approach encourages public involvement through annual reviews and ongoing consultation with interested stakeholders. |
| Inform the public about fire management activities and foster awareness of the role and benefits of fire. | Alternative A does not address this objective. | The FMP would address fire information and public education. |
| Manage fire ops. in compliance regulations and guidelines for air-quality stds, cultural and natural resource, and agency policies. | Wildland fire suppression actions would be managed in compliance with applicable state and federal regulations. | In addition to Alternative A, planning for prescribed burns would include the use of established smoke management practices and other mitigation actions to comply with applicable state/federal regulations. |

Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), as guided by the CEQ. The CEQ directs that “. . . the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101 . . .”

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.

2. Assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings.
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.
5. Achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities.
6. Enhance the quality of renewable resources and approach the maximum recycling of depleted resources.

The No-Action Alternative (A) would maintain the status-quo management program. Without a FMP, fire management objectives would not be identified. Confinement strategies and appropriate management response (ARM) would not be used in suppression operations. This elevates the risks for firefighters, and potentially increases suppression costs. The no-action alternative would allow for the continued buildup of fuels, contribute to the spread of non-native species, and the increase risk of unwanted wildland fire in and around the Monument. Over the long-term this alternative would not protect people or resources to the extent of the preferred alternative. Consequently, the no-action alternative does not satisfy provisions 2, 3, and 4 of NEPA's Section 101.

Alternative B (NPS preferred) allows for flexibility in response to wildland fire and provides more opportunities for management of hazardous fuels. Using AMR (i.e., a range of suppression and containment strategies) may lower suppression costs and risks to firefighters. Under Alternative B, managers may select specific or combination treatments of hazardous fuels, and thus would be most effective. The fuel reduction program would ultimately provide for the health and safety of visitors and employees, and the protection of natural and cultural resources. Prescribed fire treatments that occur under this alternative would contribute to long-term stability and diversity in fire-dependent vegetation communities. Humans, cultural and natural resources would receive protection from unwanted wildland fire with fewer disturbances than in Alternative A. This alternative satisfies the full range of national environmental policy goals as stated in NEPA, Section 101.

ENVIRONMENTAL CONSEQUENCES

Part of the NEPA decision-making process included an evaluation of potential impacts of Alternative A and B on the natural, cultural, and human environment at Capulin Volcano National Monument. The interdisciplinary planning team completed the assessment of potential impacts on the environment with input from the public.

Impact Assessment Methodology

The impact analysis followed the same general approach for each impact topic. Impacts were identified and assessed based on established criteria, a review of relevant scientific literature and other documents, and the best professional judgment of the planning team.

In the analysis of each impact topic there is a description of the affected environment and evaluation of potential effects. Impacts are qualified in terms of type - beneficial or adverse; context - site-specific, local, regional, etc.; and duration - short term or long term. The following definitions are consistent to all impact topics:

Beneficial: A positive effect in the condition or appearance of the resource or an affect that moves the resource toward a desired condition or accomplishes stated objectives.

Adverse: An effect that moves the resource away from a desired condition or objective or detracts from its appearance or condition.

Short term: An effect that would no longer be detectable within a short period of time as the resource is returned to its pre-disturbance condition or appearance. Short-term impacts may range from a few hours to 5 years or longer depending on the impact topic (see table below.)

Long term: A change in a resource or its condition that does not return the resource to a “pre-disturbance” condition or appearance and, for all practical purposes, is considered permanent.

Impacts may also be direct, indirect, or cumulative. ***Direct*** impacts are caused by an action and occur at the same time and place as the action. ***Indirect*** impacts occur later in time or farther removed from the area, but are reasonably foreseeable. Cumulative impacts are considered in the following section.

Evaluation of intensity - **negligible, minor, moderate, or major** vary by impact topic. Table 3: *Impact Threshold Definitions* presents the different degrees of intensity by impact topic.

Cumulative Effects Methodology

CEQ regulations define cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such action (40 CFR 1508.7.)

In order to evaluate cumulative impacts, it is necessary to identify other ongoing or foreseeable projects on NPS lands, and if applicable, the surrounding area. Few projects, activities or natural occurrences were identified during internal and public scoping. Relevant activities related directly or indirectly to past livestock grazing and the absence of fire on the Monument. These influences contributed to the establishment and spread of non-native species, and will be considered in the analysis. Minor maintenance projects at the Monument were considered, as was regional smoke management concerns.

Impairment Methodology

A determination of whether proposed actions would impair park resources is required by *Management Policies* (NPS 2001.) The fundamental purpose of the national park system, as established in the Organic Act and reaffirmed by the amended General Authorities Act, is to conserve park resources and values. NPS managers must always avoid or minimize actions that would adversely impact park resources and values. However, laws do give the NPS management discretion on impacts to park resources and values when necessary to the purpose of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress gave the NPS the discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. Impairment is a prohibited impact that, in the professional judgment of the NPS manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park,
- key to the natural or cultural integrity of the park or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

An impairment determination is provided for all resource related impact topics.

National Historic Preservation Act (NHPA) Compliance

This document includes an Assessment of Effect for proposed actions on cultural resources and cultural landscapes, in compliance with Section 106 of the NHPA (36 CFR Part 800, *Protection of Historic Properties*.) In this EA, impacts to cultural resources are described in terms derived from CEQ regulations, such as: type, duration, and intensity. In accordance with regulations from the Advisory Council on Historic Preservation, impacts to cultural resources were also evaluated by determining the area of effect; identifying cultural resources that are either listed or eligible for listing in the National Register of Historic Places; applying adverse effect criteria to those resources; and considering ways to avoid, minimize, or mitigate adverse effects.

A determination of *adverse effect* or *no adverse effect* was made for affected National Register-eligible cultural resources, as required by Advisory Council regulations. An ***adverse effect*** results from an impact that alters a contributing element of a cultural resource that qualifies it for inclusion in the National Register, e.g., diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Reasonably foreseeable adverse effects, caused by the proposed action, may occur later in time, be farther removed in distance or be the cumulative (36 CFR Part 800.5, *Assessment of Adverse Effects*.) A determination of ***no adverse effect*** means there is an effect, but the effect would not diminish in any way the National Register qualifying characteristics of the cultural resource.

CEQ regulations and NPS DO-12 call for an analysis of the appropriateness of mitigation in reducing the intensity of a potential impact, e.g., reducing the intensity from major to moderate or minor. However, any reduction in impact intensity is an estimate of the effectiveness of mitigation under NEPA. It does not suggest that the level of effect, as defined by Section 106 of the NHPA, is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse.

Consultation with the New Mexico State Historic Preservation Officer (NMSHPO) was conducted during the initial scoping for preparation of this EA. A newsletter was sent in January 2003 and a meeting occurred on May 5, 2004. During the meeting, SHPO staff and the park Chief Ranger discussed a pre-burn cultural resource survey completed in 1997 by NPS Archeologist Charles M. Hacker. NMSHPO staff agreed with Hacker's finding that prescribed burning would not adversely affect the cultural resources at Capulin Volcano National Monument. The purpose of the survey was to identify the presence of cultural resources within areas scheduled for prescribed burning. The survey did not identify any cultural resources that would be adversely affected by the prescribed burn.

The final EA will be sent to NMSHPO for review, which will partially fulfill Section 106 compliance. Project specific consultation with NMSHPO would occur before fire management projects were implemented. Consultation with concerned American Indian tribes on potential impacts to ethnographic resources was also initiated.

Table 3: Impact Threshold Definitions

| <i>Impact Topic</i> | <i>Negligible</i> | <i>Minor</i> | <i>Moderate</i> | <i>Major</i> | <i>Duration of Impact</i> |
|----------------------------|--|--|---|--|--|
| Geology & Soils | Impacts to geologic resources or soils would not be measurable or of perceptible consequence. | Changes to character of volcanic features or soils are detectable but localized. Mitigation to offset adverse effects would be standard, non-complex, and effective. | Effects to the character of volcanic resources or soils are apparent over a large portion of the Monument. Necessary measures to mitigate adverse effects would be likely successful. | Impacts to one or more volcanic features and/or soils are severe or of exceptional benefit over a wide area. Mitigation to offset adverse effects would be needed, but success not assured. | Short term refers to durations of less than 5 years. Long term refers to durations in excess of 5 years. |
| Vegetation | Vegetation would not be affected; effects limited to small areas. | Effects would be localized on one or more species or populations. Response to fire and/or other treatments would be within the range of fire effects. Any adverse effects can be effectively mitigated. | A large segment of one or more species populations show effects that are of importance, but relatively localized. Response to fire and/or other treatments would be within the expected range of fire effects. Mitigation could be extensive, but likely effective. | Considerable effects on plant populations over large areas. Impact is severe or of exceptional benefit to native species. Response to fire and/or other treatments would be outside the range of expected fire effects. Extensive mitigation required offsetting adverse effects to native species, but success not assured. | Short term refers to a period of 1-3 years. Long term refers to a period longer than 3 years. |
| Wildlife | Slight change in wildlife populations and/or habitats would not be of measurable to perceptible consequence. | Small local changes in wildlife populations or habitats would be of little consequence. Response to fire and/or other treatments would be within the range of normal fire effects. Any adverse effects can be effectively mitigated. | Changes in wildlife populations or habitats would be of consequence, but relatively localized. Response to fire and/or other treatments would be within the range of normal fire effects. Mitigation could be extensive but likely successful. | Considerable effects, possibly permanent, to native wildlife populations or habitats. Response to fire and/or other treatments would be outside the normal range of fire effects. Mitigation may be required and extensive, and success not assured. | Short term refers to a period of 1-3 years. Long term refers to a period of longer than 3 years. |
| Air Quality | Impact barely detectable and not measurable; if detected, would not be of any perceptible consequence. | Impact measurable but localized and of little consequence. No mitigation measures are necessary. | Changes in air quality have consequences to sensitive receptors, but effects remain local. Mitigation measures necessary and likely effective. | Changes in air quality have substantial consequences to sensitive receptors. Mitigation measures are necessary but success of measures not assured. | Short term refers to hours or days; i.e. the duration of the fire incident. Long term is substantially beyond the incident or action. |
| Cultural Resources | Beneficial or adverse impacts on cultural resources are at the lowest levels of detection or barely perceptible, and not measurable. | The impact affects a cultural site, structure or feature with little data potential. The historic context of the affected site(s) would be local. The impact would not affect the contributing element of a property eligible | The impact affects a cultural site, structure or landscape with modest data potential of local, regional or state significance. An adverse impact on a National Register eligible site would change a | The impact affects a cultural site or landscape with high data potential of national context. An impact that changes a contributing element and diminishes the integrity to the extent that the site is no longer eligible for National Register | Short term refers to a transitory effect; which largely disappears over a period of days or months. The duration of long term effects is essentially permanent. |

| <i>Impact Topic</i> | <i>Negligible</i> | <i>Minor</i> | <i>Moderate</i> | <i>Major</i> | <i>Duration of Impact</i> |
|----------------------------------|--|---|---|--|---|
| | | for the National Register of Historic Places. Also, an action that causes a slight change to a natural or physical ethnographic resource, if measurable and localized. | contributing element but would not diminish resource integrity or jeopardize National Register eligibility. Also, localized and measurable change to a natural or physical ethnographic resource. | listing. Permanent severe change or exceptional benefit to a natural or physical ethnographic resource. | |
| Human Health & Safety | Public safety would not be affected. Health effects occur at low levels of detection and would not have any appreciable effect on visitor use. | An action where public safety could be beneficially or adversely affected and visitor use changes would be detectable but slight. Some visitors would be aware of slight effects. | The effect of an action would be readily apparent and result in noticeable beneficial or adverse effect on health and safety. Mitigation measures are necessary and likely successful. | An action that would cause a severe change or exceptional benefit to human health and safety. The change would be measurable and possibly permanent. Success of mitigation needed to offset adverse effects is not assured. | Short term refers to the duration of a fire management incident or treatment. Long term refers to duration extends beyond the specific incident or treatment. |
| Socio-economics | There would be no measurable effect on local economic conditions, businesses or employment. | Slight changes in employment or business status would temporally affect local socio-economic conditions. | Measurable change or beneficial effect on the employment and/ or business conditions that while temporary may impact more than the local area. | A substantial change, disruption or beneficial effect on socio-economic conditions that are permanent or impacts regional socio-economic conditions. | Short term is generally the duration of a specific treatment project or incident. Long-term extends beyond the rehabilitation and evaluation phase of a project or incident. |
| Cooperative Relationships | An action that causes such a small effect on neighbor(s) activities and/or relationships that it is not measurable or perceptible. | An action with a small local effect on neighbor(s) activities and/or relationships. Mitigation would not be necessary. | An action with measurable or noticeable change in neighbor(s) activities and/or relationships. Mitigation to offset adverse effects would be necessary and effective. | An action that causes a substantial change or benefit, possibly permanent, to neighbor(s) activities and relationships. The change is measurable in time or funds. Success of mitigation to offset adverse effects is not assured. | Short term is generally the duration of a specific treatment project or incident. Long-term is through the rehabilitation phase of a project or incident and beyond. |

Table 4: Comparison of Impacts of Alternatives

| IMPACT TOPIC | <u>Alternative A (No Action)</u> | <u>Alternative B (Preferred)</u> |
|----------------------------|--|--|
| GEOLOGY & SOILS | Direct short- and long-term adverse impacts of minor to moderate intensity on local geologic properties and soils would result from high-severity wildland fires. The removal of ground cover and disturbance from suppression actions would allow for soil movement, particularly on the steep volcanic slopes. Fuel reduction projects around developed areas and along the boundary would mitigate for disturbance by people, vehicles, and treatment activities. | During the five-year schedule, short-term effects from prescribed fire and fuels thinning projects would be negligible. Long-term, indirect, local benefits to soils would be moderate in intensity as nutrient cycling, productivity and diversity in plant communities are enhanced. Adverse impacts from wildland fire and suppression actions would be similar to Alternative A, however fire frequency and severity would be reduced following the five-year treatment schedule. |
| VEGETATION | Direct, short- and long-term minor to moderate adverse impacts from the loss of surface biomass and the potential shift in species composition would occur after a high-severity fire. Continued fuels management in selected areas would not reduce the wildland fire risk or indirect, long-term adverse impact of moderate intensity on vegetation. | The long-term effects under the preferred alternative would be beneficial, indirect, localized, and of moderate intensity as fire adapted grassland and woodland communities are restored and maintained according to the FMP treatment schedule. The potential application of herbicide as a tool in the control of exotic plants has short-term negligible to minor adverse impact on local plant communities. |
| WILDLIFE | Moderate short-term adverse effects to wildlife would occur from loss of vegetation, human presence during and post- wildland fire. Indirect long- term effects of fire suppression and exclusion would result in declining habitat quality with moderate adverse effects on local wildlife populations. | Direct short-term effects to local wildlife and habitat from would be similar to Alternative A, as woody vegetation is reduced and firefighter presence temporarily displaces wildlife from project sites. Indirect long-term benefits of minor intensity would result to wildlife habitat as small projects are accomplished and native vegetation recovery increases habitat diversity. |
| AIR QUALITY | Short-term minor adverse on local air quality would result as a direct effect of wildland fire; the impact on regional air quality would be negligible. Cumulative impacts on air quality from other fires or regional haze would be adverse, regional, direct, and minor. | Similar to Alternative A, short-term minor adverse effects on local air quality would result from fuels treatment activities in the five-year treatment plan; the impact on regional air quality would also be negligible. Under Alternative B, the reduction of hazardous fuels from prescribed burns and fuel treatment projects would lessen fire intensity and indirectly result in long-term moderate air quality benefits from fewer smoke and dust emissions. Because proposed projects are of short duration, and debris pile burning is limited, long-term impacts to local and regional air quality would be negligible. |

| IMPACT TOPIC | <u>Alternative A (No Action)</u> | <u>Alternative B (Preferred)</u> |
|----------------------------------|--|---|
| | | |
| CULTURAL RESOURCES | Negligible to minor, short-term adverse effect locally on cultural resources and values would be expected from wildland fire and suppression activities. Mitigation actions to ensure there are no adverse effect on cultural resources would be a factor of any fire suppression or fuel treatment project. Hazardous fuel thinning projects around facilities, near roads and along the park boundary would result in long-term minor to moderate benefit to cultural sites and values. However, the loss of historic structures or cultural landscape features from wildland fire would result in direct long-term adverse impacts of moderate intensity. | Mitigation actions in Alternative B would indirectly have long-term indirect benefits of moderate intensity on archaeological sites, historic structures, and cultural landscapes. Short- and long-term indirect benefits to traditional cultural resources would result from the potential decrease of fire intensity and duration. Until fuels are reduced, suppression actions around known or possible cultural resources would result in effects similar to Alternative A. |
| HUMAN HEALTH & SAFETY | Local public health and firefighter safety would be adversely affected in the short-term. During times of high fire danger, the intensity of effect on safety and public health would be moderate. | As fuels treatment objectives are accomplished using strategies proposed in a FMP (including prescribed fire, hand/mechanical hazard fuel reduction and slash pile burning), the health and safety effect on the public and firefighters would be beneficial, direct, long-term and minor to moderate in intensity. |
| SOCIO-ECONOMICS | There would be indirect short-term, minor adverse effect on local socioeconomics that result from park closures during wildland fires. Long-term socioeconomic impacts would be negligible given the infrequent occurrence of wildland fire in the local area. Short-term benefits that fire suppression activity might have on local businesses and employment would be minor. | As the FMP is implemented and project funds are available for thinning and prescribed fire work, short- and long-term effects would be beneficial, localized, and of minor intensity. Short-term effect on local socioeconomic conditions during wildland fire and suppression operations would be similar to Alternative A. Negligible cumulative effects on regional economic conditions would be anticipated over the long- term. |
| COOPERATIVE RELATIONSHIPS | Cooperative agreements for initial attack and local fire suppression would continue and have minor direct, beneficial effects of long-term duration. Cumulative effects from other cooperative relationships would be negligible. | The adaptive management approach taken in the FMP would promote increased involvement with cooperators and neighbors; and long-term beneficial effects of moderate intensity would result. Cumulative effects on relationships with neighbors and cooperators would be beneficial, long-term, and of moderate intensity. |

Impact Topic: GEOLOGY & SOILS

Affected Environment. Soils found at Capulin Volcano occur in two major series: Bandera and Fallsam. The grasslands west of the cinder cone overlay the Fallsam-Rock complex. The cinder cone and sections east of the cone consist of the Bandera association.

Fallsam cobbly silt loam is a deep, well drained soil occurring on the sides of basalt squeeze-ups and ridges, occupying 1-9% slopes. Erosion hazard from wind and water is slight. Effective rooting depth of vegetation is 40 inches or more. The Plains-Mesa Grassland habitat type is associated with this soil series.

Bandera gravelly silt loam formed from eolian and colluvial material of volcanic origin. It occurs on 0 – 25% slopes. These soils are excessively drained and somewhat deep with an effective rooting depth of 12 – 26 inches. The hazard of water erosion is moderate and impact from soil blowing is slightly hazardous. Over 80% of the vegetation for these soils should be grass with forbs and woody species present. Cinder land is the soil type of cinder cones and is also associated with the Bandera series. Cinder land is very similar to the Bandera soil, except that soil depth to cinders is 0 – 4 inches and occurs on 10 – 80% slopes. The Pinyon-Juniper Woodland habitat type is associated with this soil. The physical stability of geologic features, cinders, ash, and soil is sensitive to human caused disturbance and weather events. The severity and aerial extent of fire, combined with subsequent precipitation amounts, influence the extent that soils and geological features would be affected.

Regulations and Policies. Current laws and policies require that the following condition be achieved in the park for geologic resources and soils.

| Desired Condition | Source |
|---|--|
| Natural soil resources and geologic processes function in as natural condition as possible, except where special management considerations are allowable under policy | Monuments' enabling legislation; NPS Management Policies |

Impacts of the No-Action Alternative (A)

Analysis. Under Alternative A, all wildland fires would be suppressed and any fuel reduction would be accomplished through manual/mechanical thinning projects.

Impacts to soils from wildland fire generally occur from large-scale high intensity fires or from suppression tactics. Where low intensity fires occur or where the fire affects a small portion of a watershed, changes to soils are difficult to detect (Agee, 1993.) Erosion processes would be accelerated by moderate to high severity fires in the pinyon-juniper woodlands, especially on the steep-sided cinder cone. Minor to moderate soil movement and loss of geologic material would be expected in areas where ground cover was removed and mineral soils exposed by wildland fire. Soil erosion on the cinder-cone may be moderated by absence of continuous vegetation and patchy burn patterns. A low intensity-type fire generally occurs in the grassland areas, and the root systems of the grasses remain to stabilize the soils. The direct effects of wildland fire on soil properties may include changes in soil chemistry (e.g., loss of nitrogen), reduction in porosity, and consumption of organic matter.

Indirect effects of wildland fire include an increase in soil temperature and erosion after vegetation layers are removed. Steep slopes, precipitation, and removal of vegetation by fire may increase the soil erosion process locally on a moderate to long-term basis.

Suppression-related activities and mechanical thinning projects would have direct, short-term adverse effects on soils due to compaction and disturbance by equipment, fire line construction, and thinning activities. Mechanical treatment does not generally remove ground vegetation and erosion potential is lessened, if disturbance is minimized. Mitigation and rehabilitation actions to assure soil recovery after fire activities would reduce impacts to negligible or minor levels.

Cumulative Effects. Activities considered in this analysis include wildland fire and fire suppression activities, past and present, in the Monument and on adjacent lands; human-caused disturbance from activities such as off-trail hiking, construction and maintenance of the Volcano Road, livestock grazing and cinder mining on adjacent lands; restoration of disturbed lands; and natural erosion processes and patterns on the steep cinder cone slopes. High intensity wildland fires resulting from continued fuels buildup are more probable under the No Action Alternative. This would result in minor to moderate, adverse effects on soil stability, which on the cinder cone would be long-term.

Conclusion. Under the no-action alternative, minor to moderate, short-term and long-term, adverse effects would occur to the soils and geology resources from high severity fires and subsequent suppression actions.

Alternative A would not cause major adverse impacts or impairment of geology and soils whose conservation is necessary to the purposes for establishing the Monument, that are key to the natural or cultural integrity of the Monument; or are identified as a management goal in the Monument's General Management Plan or other relevant NPS planning documents, there would be no impairment to the Monument's geological or soils resource.

Impacts of the Preferred Alternative (B)

Analysis. Under Alternative B, the use of prescribed fire and reduction of hazardous fuels, especially in the pinyon-juniper woodland, is expected to reduce the severity of wildland fire and The duration and intensity of heat generated during prescribed fires are not anticipated to consume more than the surface litter layer, thereby minimizing the loss of soil organic matter. Short-term adverse effects to geologic features, cinder and ash soil layers, would be negligible to minor as treatments are implemented. Soils may experience disturbance in local treatment areas due to the presence of staff, vehicles, the removal of slash, and prescribed burning; however, the direct impacts would be short-term, and minor. Mitigation and rehabilitation measures like those in Alternative A would offset adverse impacts from wildland fire, fire suppression, and fuel reduction activities.

If wildland fire and prescribed fires are kept to lower intensities and remain on the ground, then moderate long-term benefits to soils and soil chemistry/nutrients would result. By reducing the threat of high intensity wildfire, the potential use of heavy equipment for fire suppression would also be reduced, if not eliminated. The increase in herbaceous cover anticipated after treatment

actions open the pinyon-juniper canopy would result in long-term moderate benefit to soil and geologic resources.

Since herbicide application would be limited in area and amount, the effect on soils would be negligible over the long term. The migration of herbicide would be negligible because the highest concentration of cheatgrass occurs at the base of the volcano where terrain is nearly flat.

Cumulative Effects. The cumulative impacts in Alternative B are analyzed for the same activities described in Alternative A. The greatest potential for long-term benefits to the soil condition and stability would result from reducing the intensity of wildland fire from fuel reduction and prescribed burning activities proposed in Alternative B. Therefore, cumulative adverse effects to soils are predicted to be minor and relatively localized, with reclamation and revegetation of disturbed sites, including burned areas, providing beneficial effects over time.

Conclusion. Overall, the short-term adverse effects of Alternative B to directly on soil and geologic resources would be negligible to minor. Beneficial long-term impacts to soils would result from the re-establishment of a fire-driven nutrient cycle and increased stability of the soil strata, given increased native herbaceous ground cover, and the reduced threat of severe wildland fire. Alternative B would not produce any major adverse impacts or impairment of soils resources or geological values whose conservation is necessary to the purpose of the establishment of the monument that are key to the natural or cultural integrity of the monument; or that are actions identified as a management goal of the monument.

Impact Topic: VEGETATION

Affected Environment. The following discussion of general vegetative dynamics at Capulin Volcano is based on studies in similar southwestern habitats.

In certain mixed-grass ecosystems, livestock grazing favored short-stature sodgrasses over taller bunchgrasses. This effect has resulted in the removal of much herbaceous vegetation that provided fine fuels necessary to carry frequent, low-intensity fires. Fire suppression combined with domestic livestock grazing caused widespread transformation of woodlands into denser forests with a decreased understory of herbaceous plants. Reduced grass cover has facilitated establishment of juniper seedlings (Moir and Fletcher 1998.)

Plains grasslands in the Southwest have been considerably altered by shrub invasion following livestock grazing and fire suppression (Brown, 1994.) Natural short-grass prairies evolved under periodic wildland fire and wildlife grazing pressure. These forces promote the diversity of this ecosystem and keep fuel loading at safe levels. After livestock grazing was introduced around the mid-1800s, the natural fire frequency was reduced because surface-fuel continuity decreased below the point where fire could be sustained. Suppression policies also reduced the role of fire. Shrub species now dominate the earlier grassland community (National Park Service 1996.) Pinyon-juniper forest invaded and replaced grasslands over much of the steep slopes of the Monument. Thus, there is a decline in herbaceous vegetative cover and ecosystem diversity.

Exotic plants are established adjacent to roads, trails, and developed areas around the Visitor Center. These species include common mullein, yellow and white sweetclover, cheat grass, and Russian thistle. Russian thistle colonizes a burn site within one to three years, and dominance on disturbed lands lasts for an average of one year. The thistle population then declines, until further disturbance occurs. Roads, trails, and disturbed areas function as corridors for invasive species to move into the Monument (Young 1991.)

Regulations and Policies.

| Desired Condition | Source |
|---|--|
| Populations of native plant species function in as natural condition as possible except where special management considerations are warranted. | Monuments' enabling legislation; NPS Management Policies |
| Management of populations of exotic plant species, up to and including eradication, would be undertaken wherever such species threaten park resources and when control is prudent and feasible. | NPS Management Policies; Executive Order 13112, Invasive Species |

Impacts of the No-Action Alternative

Analysis. Alternative A would suppress all ignitions, and reduce hazardous fuels from targeted areas along roads, near facilities, and along the park boundary. Fuel buildup would continue, especially on the cinder cone, and the potential for severe wildland fire would not be significantly reduced. Some mortality of grass, shrub, and tree species would result, especially if the intensity and residence time of the flaming front increases in heavily fueled areas. This type of fire behavior would add to plant mortality.

The direct impacts of wildland fire include removal of above ground biomass. Depending on the timing and intensity, wildland fire could shift species composition; although different vegetation communities would experience varying impacts and reactions. The degree of shift would in most cases be minor; however the further loss of plant diversity on the cinder cone would have long-term moderate adverse effects on geological resources. The build up of fuels in the pinyon-juniper community would create conditions for more severe crown fires. Greater tree mortality would result with long-term indirect, localized, and moderate adverse effects. Desired species diversity and sustainability in grassland and woodland communities would not be accomplished. As native plants compete with exotic species, continuing present management practices over the long-term would also have a indirect, localized, adverse effect on species diversity of moderate intensity. Certain non-native plants, such as Russian thistle and cheatgrass would continue to displace native species.

Cumulative Effects. Management activities to contain exotic plants would continue at current levels without the direct benefit of prescribed fire or option to use herbicides on invasive plant species. Cumulative impacts from past, present and future wildland fire and suppression actions (vehicle compaction, fire line construction, etc.) would result in minor long-term adverse impacts to park vegetation. Fuel reduction treatments in selected sites would produce negligible to minor benefits to woody vegetation.

Conclusion. Direct minor to moderate adverse impacts with the loss of surface biomass and the potential shift in species composition after a high-severity fire would occur under Alternative A. The indirect effects of continued management without an FMP would be adverse, moderate in intensity, localized, and long-term in duration due to declining species diversity and sustainability. There would be no major adverse impacts or impairment of vegetation resources whose conservation is necessary to the purpose of the Monument that are fundamental to the natural or cultural integrity of the Monument; or are actions identified as a management goal.

Impacts of the Preferred Alternative

Analysis. Along with the manual/mechanical fuels treatment, and continued suppression of wildland fire, the range of actions in Alternative B include the use of prescribed fire and application of herbicide. These actions would manage plant communities, reduce fuel loads, control wildland fire, and contain invasive plant species. Combined thinning and prescribed fire treatments in this alternative range from 70 acres per year to a maximum of 400 acres per year. These acreage targets are greater than amounts initially presented to the public. The five-year treatment plan (Appendix A) was developed after the external scoping and public meetings. In an effort to reduce the acre/unit treatment costs and promote greater efficiency, agency guidance encouraged increasing the treatment targets. Fuel treatments such as thinning are more ambitious in the first five-year schedule, and would be followed by reduced maintenance treatments as desired conditions are approached. Heavily wooded areas, especially on the cinder cone, may require multiple fuel treatments before prescribed burning could take place.

The short-term direct effect of prescribed fire on native perennial herbaceous and shrub cover would be a minor, adverse, and localized from initial loss of biomass. Successive application of prescribed fire would encourage a mosaic of plant associations. Over the long-term, weedy plants would be replaced by long-lived perennial species. As nutrient cycles increase and fuel loads are reduced to more natural ranges, long-term benefits in both vigor and species diversity would be indirect, localized, and of moderate intensity. Adaptive management would include close monitoring after prescribed burns and evaluating the effect of fire on vegetation management objectives. Managed burns in areas with invasive plant populations would be followed by localized herbicide applications directly on targeted plant species. This combined strategy would increase the options for controlling invasive plants, particularly cheatgrass, resulting in localized moderate benefits to the native plant community.

On the cinder cone, the long-term effect of labor intensive fuel reduction projects would produce minor to moderate local benefits by removing fuel ladders, opening forested areas to greater plant diversity, in addition to lessening erosion.

Cumulative Effects. Activities within the Monument and on surrounding State lands with potential impact on vegetation include: past and future wildland fire and suppression operations (from vehicle compaction, fire line construction, etc.); fuels reduction within and adjacent to the Monument; and prescribed fire as proposed in the treatment schedule. As suppression actions became less frequent, adverse impacts would decrease from minor to negligible with the reduction of fuel accumulation on the volcano. Over time, the use for the combined strategies in Alternative B would result in indirect beneficial cumulative impacts to affected vegetation.

Conclusion. The long-term effects under the preferred alternative would be beneficial, indirect, localized, and of moderate intensity as fire adapted grassland and woodland communities are restored and maintained. Alternative B would not produce any major adverse impacts or impairment of vegetation resources whose conservation is necessary to the legislated purposes and key to the natural or cultural integrity of the Monument; or identified as a management goal of the Monument.

Impact Topic: WILDLIFE

Affected Environment. The assessment of impacts on wildlife resources used the general methodology described at the beginning of this chapter and the following resource specific information Wildlife known to frequent the Monument include such species as mule deer, pronghorn, coyote, cottontail rabbit, black bear, mountain lion, bobcat, Merriam's turkey and turkey vulture. A variety of raptors may either nest or winter on or around the volcano, as do neotropical and non-neotropical birds. Common raptor species include red-tailed hawk, golden eagle, kestrel, and prairie falcon.

The occurrence of the Pale Townsend's Big-eared bat (*Plecotus townsendii pallescens*) and Capulin Alberta butterfly (*Oeneis alberta capulinensis*) are of special interest. The Pale Townsend's Big-eared bat is in decline throughout its range, including New Mexico. The presence of this species at Capulin Volcano was documented during the summer of 2002. This bat is vulnerable to human disturbance (BISON-M, 01/2004.) The implication of fire management activity on bat habitat needs to be evaluated. The Capulin Alberta butterfly (*Oeneis alberta capulinensis*) is a species endemic to Capulin Volcano, and requires a high-elevation grassland habitat. To date there are three documented populations in northeast New Mexico. Research into the butterfly's natural history would provide information critical to future management of this habitat. Fire management activities have potential long-term beneficial impacts on the butterfly's grassland habitat.

Regulations and Policies.

| Desired Condition | Source |
|---|--|
| Populations of native animal species function in as natural condition as possible except where special management considerations are warranted. | Monuments' enabling legislation; NPS Management Policies |

Impacts of the No-Action Alternative

Analysis. Without a FMP, all wildland fires would be suppressed and manual/mechanical fuel treatment projects would occur in selected areas. In the short-term, displacement of individual wildlife species and adverse impacts on local habitat would be minor to moderate as the direct result of fire heat and indirectly through suppression operations, follow-up rehabilitation, and

fuel treatment projects. Increasing fuels and decreased plant diversity would hinder movement and foraging opportunities, as well as increase the potential for more intense fires. Under No Action Alternative, the displacement of native vegetation by exotic species would continue long term, with subsequent adverse and indirect effects of moderate intensity on local wildlife habitat.

Of the birds covered under the Federal *Migratory Bird Treaty Act*, none are currently known to be affected during their nesting season by existing fire management actions or from the exclusion of fire from fire-dependent communities.

Cumulative Effects. In Alternative A the incremental impacts of past management practices plus existing and potential fire management activities, within and outside Monument, were evaluated. A low level of visitor use is anticipated for a proposed 1.5 mile hiking trail on the west side of the cinder cone. The cumulative impact on wildlife habitat would be long-term, minor, and adverse. A three to five year schedule of repairs to the Volcano Road would be expected to cause short-term displacement of wildlife during construction periods. Cumulative impacts from the exclusion of fire in the ecosystem, past and potential suppression actions, labor intensive fuel reduction and park maintenance activities would be minor for individual wildlife species. Overall, cumulative adverse impacts would be negligible to minor, direct and indirect, and localized with short and long-term consequences.

Conclusion. Under the No Action alternative, current management would result in minor to moderate, adverse impacts to wildlife over the short term from the direct effects of wildland fire and management activities on individual species and habitat. The long term indirect result of limiting the role of fire in this ecosystem would be moderate adverse effects on wildlife habitat. Alternative A would not produce any major adverse impacts or impairment of wildlife values whose conservation is necessary to the legislated purpose that are key to the natural or cultural integrity of the Monument; or are identified as a management goal.

Impacts of the Preferred Alternative

Analysis. Under Alternative B, the type of impacts to wildlife would be the similar to those described under Alternative A. However, prescribed fires would be less intense or widespread and for most species planned during non-breeding periods. Fuel thinning and prescribed fire would expand the edge effect and benefit wildlife habitat in the long term.

Short-term impacts to some wildlife species include negligible to minor disturbances from human activity during wildland or prescribed fire operation. Logs and branches removed during manual/mechanical fuels projects would be piled for burning the following winter, but would increase the cover for small mammals in the short-term. Standing dead trees with signs of wildlife use would be left in place. Limited herbicide applications after prescribed burning in cheatgrass stands would have a negligible effect on small mammals and birds because of the low concentrations applied.

Cumulative Effects. Impacts from past, present, and future fire management activities, combined with maintenance actions would result in short-term, minor, adverse impacts to wildlife, assuming prescribed fire and non-fire treatments occur at appropriate times to avoid impacts on

breeding species. Human presence during treatment projects and maintenance activities would add to the short-term displacement of certain species. Low visitor use of a proposed trail on the west side of the park would be a long-term negligible to minor adverse impact on certain wildlife species, such as mule deer and black bear. The combined strategies of prescribed fire, manual/mechanical fuel reduction, and mitigation actions, such as minimal ground disturbance and herbicide treatment of invasive plants, would result in long term beneficial impacts as plant community response favors wildlife habitat.

Conclusion. Alternative B would generally result in minor to moderate long-term beneficial impacts for most wildlife species. The return of fire to the ecosystem would increase plant diversity and improve habitat with indirect minor to moderate benefits to wildlife. Alternative B would not result in any major adverse impacts or impairment of wildlife and values necessary to fulfill the specific legislated purpose that is vital to the natural or cultural integrity of the Monument; or is identified as a management goal.

Impact Topic: AIR QUALITY

Affected Environment. No major stationary sources of emissions exist nearby. Traffic along U.S. Highway 64/87 is light and emissions are negligible compared to urban Front Range population centers. Improvements planned for highway 64/87 will result in an approximate 25% increase in commercial truck traffic over 20 years. Locally, infrequent wildland fires on neighboring lands causes short-term minor adverse impacts on air quality. Federal or state-agency prescribed fires are not known to occur within 30 miles of the Monument. However, smoke from large fires that occur in Mexico and Arizona contribute to regional haze with a minor to moderate short term degradation of air quality and scenic quality.

Air quality is a significant element in the scenic quality and panoramic views appreciated by visitors to Capulin Volcano NM.

Regulations and Policies. Capulin Volcano National Monument is a Class II air quality area. Current laws and policies require that the following conditions for air quality be achieved in national monuments.

| Desired Condition | Source |
|--|--|
| Air quality in the Monument meets national ambient air-quality standards (NAAQS) for specified pollutants. | Clean Air Act; NPS Management Policies; New Mexico State Implementation Plan |
| Park activities do not contribute to deterioration in air quality. | Clean Air Act; NPS Management Policies |

Impacts of the No-Action Alternative

Analysis. Under Alternative A, the buildup of fuels from the suppression of wildland fires and would be reduced by manual/mechanical fuel reduction projects in selected areas, such as along the park boundary and within the developed area. Direct impacts to air quality would include the release of particulates and smoke during wildland fire events, and the slight increase in fugitive dust from suppression or fuel treatment activities. These impacts would generally be short term

(less than 24 hours), adverse, and of minor intensity. This assumes that wildland fires are extinguished immediately. This alternative also assumes that fuel loads continue to build on the Monument and that the risk of impacts from large-scale events increases over time. Should fire not be contained immediately, impacts to air quality and visibility would be adverse and longer term (greater than 24 hours, up to 3 or more days.) Indirect effects from short and long term emissions would include reduced visibility along roads, the reduction of recreation and scenic values, and possible adverse health effects to park residents and visitors.

Cumulative Effects. Cumulative effects would include smoke from other wildland fires in the area or region, minor emissions from vehicular traffic, fugitive dust from maintenance activities, and debris burning on area ranches. The cumulative adverse effect would be minor, direct and indirect for air-quality values including visibility. The intensity and duration of effects would be influenced by fire behavior and weather conditions.

Conclusion. Under the no-action alternative, adverse impacts to air quality and scenic values would be short term, locally minor in intensity, but negligible on a regional basis, as the result of wildland fire and fire suppression actions, especially if fires occurred during the summer season. No major adverse impacts or impairment of air-quality-related values whose conservation is necessary to the specific legislated purpose key to the natural or cultural integrity of the Monument; or identified as a management goal would occur under Alternative A.

Impacts of the Preferred Alternative

Analysis. Fire management strategies in Alternative B include the suppression of wildland fires and fuel reduction activities that include thinning, slash burning, and prescribed fire. Planning and preparation for a prescribed burn would include: the location, size, type of fuels; estimates of emissions, showing smoke plume travel; duration of burn; and whether air quality standards would be exceeded for any period of time. An application and notification is required by the New Mexico Environmental Quality Department – Air Quality Bureau. The state agency has authority to suspend or restrict burning because of poor air quality. Union County would require a burn permit if burn restrictions are in place. The county would also require the park to contact the State of New Mexico Environmental Department, Raton Field Office. The adverse influence of smoke on health, safety, and scenic values would be kept to a minimum by following smoke management prescriptions listed in the FMP.

Prescribed fire and slash pile burning would be used in grassland areas, and in pinion-juniper areas where thinning has already occurred, which would lessen the effects of smoke. Impacts would be further reduced by burning when conditions are good for smoke dispersal and when visitor use is minimal. These emissions would result in short-term, negligible to minor adverse impacts to air quality and air quality-related values.

Because of the short duration of proposed projects, limited use of power equipment, and limited debris pile burning, negligible impacts to local and regional air quality over the long-term would be anticipated. Under Alternative B, the reduction of hazardous fuels from prescribed burns and fuel treatment projects would reduce the intensity of wildland fires and indirectly result in long-term moderate air quality benefits from fewer smoke and dust emissions.

Cumulative Effects. Cumulative effects to local and regional air quality would range from negligible to minor, influenced by the timing and extent of other emissions that might coincide with fire events in the Monument. Actions in the Preferred Alternative that coincide with fire activity in the surrounding region, regional haze from Front Range sources, and dust emissions from Monument maintenance activities would result in cumulative minor short-term adverse impacts on air quality.

Conclusion. Under Alternative B, negligible to minor adverse impacts on air quality in the local area would be short-term. Slash pile and prescribed burning would cause direct localized minor impacts in the short-term that would be offset in the long-term by the reduced risk of severe wildland fire behavior. There would be no major adverse impacts or impairment of air-quality-related values whose conservation is necessary to the purpose identified in the establishing legislation for Capulin Volcano NM; that are fundamental to the natural integrity of the Monument; or are identified as a management goal.

Impact Topic: CULTURAL RESOURCES

Area History

Paleo-Indian Period: 10,000 BC to 5500 BC. This period, typified by the Folsom Site approximately 8 miles from the Monument, is characterized by small groups exploiting regional resources in a migratory lifestyle. Utilization of Pleistocene megafauna, such as Mammoth and Giant Bison, was an important seasonal activity. However, the acquisition of plant resources was undoubtedly as important. Paleo-Indian cultural materials reflect a mobile, big-game-hunting lifestyle with tool kits generally suited for animal killing and processing. Habitation structures are extremely rare, with none being reported from northeastern New Mexico.

Archaic and Ceramic Periods: 5500 BC to 1100 AD. As Pleistocene environmental conditions were replaced by those more similar to today's environment, the big-game-hunting tradition evolved into a life-way that focused on plant collection and on hunting a great variety of small fauna. Ceramics associated with the Plains Woodland sites consist of cord-marked and plain pottery.

Protohistoric & Historic Periods: 1550 AD to Present. The Athabascan peoples of this period were generally known as the Dismal River Apache and Kiowa Apache. These groups moved gradually south and west through the area. During historic times, Plains Indians such as the Southern Comanche, Utes, and Jicarilla Apache hunted and lived in the area. The quest for gold took Spanish explorer Francisco Vásquez de Coronado through the region in 1541 and into the Great Plains somewhere in present day Kansas. Capulin Volcano served as a landmark along the Granada-Ft. Union military supply road, and the Goodnight-Loving cattle trail. In the 1860s and 1870s, Charles Goodnight led massive cattle drives through the region from Texas to Colorado. Some area ranchers are descendants of the cowboys who participated in the great cattle drives. Sheep herding and dry-land farming were attempted, but cattle ranching remains the main economic activity in Northeast New Mexico.

Many local ranches have been operated by generations of the same families (NPS 1996.) The Archuleta family (Eniceto, Marcos, Andres, and Albino) brought 4,000 sheep from the San Luis Valley in Colorado to the area in 1839. After the Civil War, the family moved a herd of 1800 longhorns from Monte Vista, Colorado and traded with Lucien Maxwell for a herd of 1200 short horned cattle (Folsom Centennial Committee 156-157.) The Cornay family (Carlos) started raising sheep in the area in 1880, after moving from France to Canada in 1865. Carlos also worked for several cattle ranches in the area on cattle drives. Carlos' son Antonio took over the ranch operations in 1921; but the ranch was later divided between Antonio, who took the cattle, and a daughter, Victoria, who took the sheep. Three of Antonio's seven children still live in the area and the family ranch still operates today. The Morrow family (John) came by train to New Mexico in 1888 from Wisconsin. After teaching school in Folsom and on Johnson Mesa, John became a lawyer and amassed a large amount of ranch land. John never lived on the ranch, but his sons, James, John and Raymond did and raised their families in the area. Cornay and Morrow are two private landowners that neighbor the national monument. (Folsom Centennial Committee 168-169.)

This brief history provides a framework for the following description of the present day affected environment. The cultural resources at Capulin Volcano National Monument have not received a comprehensive inventory (National Park Service 1996.)

Cultural Landscapes

Affected Environment. A Cultural Landscapes Inventory for Capulin Volcano NM (NPS 2003) suggests that the cultural landscape at Capulin Volcano NM is eligible for the National Register. Cultural landscape types are (1) Historic Designed Landscape and (2) Ethnographic Landscape. The resource inventory included the rim and crater trails, archaeological sites, the ascent road, remnants of a stone fireplace, and the Mission 66 development, which included buildings and landscapes in the visitor center area. The inventory also identified structures appropriate for a yet to be completed List of Classified Structures. While no ethnographic survey has been conducted, the cultural landscape inventory determined that these values are likely to exist, and are discussed in the following section on Ethnographic Resources.

The current condition of cultural landscapes is determined to be fair (NPS 2003.) This condition indicates that the landscape shows clear evidence of minor disturbances and deterioration by natural and/or human forces, and some degree of corrective action is needed within 3-5 years to prevent further harm to its cultural and/or natural values. Of particular interest to the FMP are clusters of trees and shrubs in the volcanic squeeze-ups to the northeast of the visitor center, and several tall spruce and fir trees planted throughout the visitor center and housing complex.

Archeological Sites & Ethnographic Resources

Affected Environment. Five archeological sites have been documented and condition assessments recorded. Two of these sites are rock shelters or caves, one is an artifact scatter, and the two sites feature rock wall structures. One cave has experienced significant disturbance and no longer possesses integrity. The second cave has not been dated accurately.

Original records for three sites were documented by Joe Winter in 1985. Updated condition assessments for these sites, plus a fourth discovered in 1998, were completed in 1999 by Adrienne Anderson and Catherine Spude. In 2003, the fifth documented site was recorded by Spude. A pre-burn archeological survey was completed by Charles Haecker in 1997, which found that the cultural resources known at that time would not be affected by prescribed burn activities, and recommended no mitigation actions.

Ethnographic resources are those cultural and natural resources to which park-associated communities ascribe significance and that continue to play a role in a community's identity and way of life. Only members of the communities to whom the resources hold cultural value can determine ethnographic resources and potential impacts to them. For purposes of this analysis, ethnographic resources are considered as a sub-impact topic under cultural resources.

For the early and modern Native Americans, the Capulin area represented a hunting ground and pathway to seasonal camping areas. The cinder cone undoubtedly featured in Native American cultural tradition and is likely a significant element of the ethnographic landscape. An ethnographic survey would further define these traditions.

European-American settlers took their livelihood from land surrounding Capulin Volcano. One of the first uses was grazing. Spanish settlers migrated south from the San Luis Valley in Colorado, bringing herds of sheep with them in the early and mid-1800s. Anglo-European settlers and Americans soon followed bringing herds of cattle with them in the late 1800s. Cattle ranching eventually replaced sheep herding during the latter part of the 19th century. Cattle grazed the lands in the Monument until the mid-1930s, when NPS property was fenced. Wood cutting on the volcano and cinder mining comprise other traditional use activities.

Historic Structures

Affected Environment. There is no listing for Capulin Volcano on the National Register of Historic Places or National Historic Landmark designation. The *Cultural Landscape Inventory* (NPS 2003) identified structures appropriate for a yet to be completed List of Classified Structures, which include: the fireplace remains from an old campground originally constructed in 1934; a rock shelter/exhibit building at the top of the crater trail constructed in 1955; and the Visitor Center area, developed in 1964 as part of the NPS Mission 66 program. The visitor center-office building may be eligible for the National Register, with two single-family houses from the same period. Other structures such as a third residence, administrative office additions, facility-maintenance buildings, and the toilet facility atop the volcano are considered noncontributing elements. The rim and crater trails were renovated as part of the Mission 66 program. The remnants of an old ranch road are located on the east side of the volcano within the Monument boundary.

Regulations and Policies.

DO-28, Cultural Resource Management Guideline, speaks to the protection of cultural resources within units of the NPS. Specifically, the policy identifies guidelines that apply to the NPS-preferred alternative, which are the following:

Archeologists review and assess all proposed undertakings that could affect archeological resources to ensure that all feasible measures are taken to avoid resources, minimize damage to them, or recover data that otherwise would be lost. Assessments are documented in environmental impact statements, environmental assessments, general management plans, development concept plans, archeological clearance forms, and other planning and compliance documentation.

Park development, park operations, preservation treatments, and other actions affecting archeological resources are initiated only upon completion of all required consultation and legal compliance requirements and only when supported by approved proposals, task directives, plans, or reports.

If no historic properties are found in the area of potential effect, the NPS must provide the SHPO and interested persons with documentation of this finding.

In the case of fire management at Capulin Volcano NM, all planned (i.e., prescribed fire) and unplanned (i.e., wildland fires) activities require timely and appropriate consultations. These are identified in the mitigation section.

Current laws and policies require that the following conditions be achieved in the park.

| Desired Condition | Source |
|---|--|
| Archeological sites are identified and inventoried, and their significance is determined and documented Archeological sites are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable In those cases where disturbance or deterioration is unavoidable, the site is professionally documented and salvaged. | National Historic Preservation Act; Executive Order 11593; Archeological and Historic Preservation Act; Archeological Resources Protection Act; the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement Among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies |

Current laws and policies require that the following additional conditions also be achieved for historic, ethnographic resources and potential ethnographic resources in the Monument.

| Desired Condition | Source |
|---|--|
| Historic properties are inventoried and their significance evaluated under National Register criteria. The qualities that contribute to the eligibility for listing or listing of historic properties on the NRHP are protected in accordance with the Secretary of the Interior's Standards (unless it is determined through a formal process that disturbance or natural deterioration is unavoidable). | National Historic Preservation Act; Executive Order 11593; Archeological and Historic Preservation Act; the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement Among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies |
| All agencies shall accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the | E.O. 13007 on American Indian Sacred Sites |

| Desired Condition | Source |
|---|--|
| physical integrity of these sacred sites. | |
| NPS regulations on access and use of park resources will be applied in a manner that is consistent with park purposes and does not unreasonably interfere with native American traditional uses or sacred resources and does not result in degradation of park resources. | NPS Management Policies, E.O. 13007 on American Indian Sacred Sites |
| Other federal agencies, state and local governments, potentially affected Native American and other communities, interest groups, State Historic Preservation Officer, and the Advisory Council on Historic Preservation will be given opportunities to become informed about and comment on anticipated NPS actions at the earliest practicable time. | National Historic Preservation Act, Programmatic Memorandum of Agreement Among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995), Executive Order 11593, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007 on American Indian Sacred Sites, Presidential Memorandum of April 29, 1994 on Government-to-Government Relations with Tribal Governments, NPS Management Policies |
| All agencies shall consult with tribal governments prior to taking actions that affect federally recognized tribal governments. These consultations are to be open and candid so that all interested parties may evaluate the potential impact of the proposals. Parks will regularly consult with traditionally associated native Americans regarding planning, management, and operational decisions that affect subsistence activities, sacred materials or places, or other ethnographic resources with which they are historically associated. | American Indian Religious Freedom Act, Presidential Memorandum of April 29, 1994 on Government-to-Government Relations with Tribal Governments, NPS Management Policies |
| The identities of community consultants and information about sacred and other culturally sensitive places and practices will be kept confidential when research agreements or other circumstances warrant. | NPS Management Policies |

Impacts of the No-Action Alternative

Analysis.

Archeological & Ethnographic Resources - Based on the Advisory Council on Historic Preservation regulations (36 CFR 800.9), the no-action alternative would have the potential to adversely affect archeological resources. Archeological resources would be at risk from intense wildland fire, and suppression activities. The build up of vegetation may present an even greater threat to cultural resources than the actual fire, and long-term, moderate, direct and indirect adverse impacts. During fire suppression and rehabilitation operations, known archeological sites, and features, such as rock shelters, walls, and artifact scatter, would be avoided; and a fire qualified archeologists would monitor any ground disturbing activities (see *Mitigation as Part of this Alternative.*)

Since archeological sites and features are non-renewable, most adverse effects on archeological sites would be considered direct and long-term, if resources were not monitored and protected during suppression operations. The intensity of impact would depend on fire behavior and mitigation efforts.

Given the history of relatively low fire occurrence, the potential for a wildland fire so destructive as to adversely affect scenes, features, or other values integral to traditional uses would be negligible to adverse, localized, indirect, and minor over the long term. Ongoing tribal consultations would minimize the risk to traditional use sites.

Historic Structures & Cultural Landscapes - Wildland fire and associated suppression operations would have a direct, short-term, and negligible to minor adverse effect on historic structures and cultural landscapes. Variability in fire behavior and location make it difficult to identify potentially affected resources. An evaluation of Monument buildings is needed to identify eligibility for National Register listing. Over time, the direct risk to historic structures and cultural landscape features from wildland fire would increase under Alternative A with minor to moderate impacts. However, fuel treatment projects would continue under this no-action alternative and reduce the fire risk in the Mission 66 developed area.

Cumulative Effects. Cumulative effects result from past, present, and future actions, such as: activity on adjacent lands, including grazing and ground-disturbing operations; erosion from natural processes and human disturbances; and damage from vegetation growing in sites. When considered with the potential effects from wildland fire and suppression operations, under the no alternative, adverse effects would be long-term and minor to moderate in intensity.

Conclusion. Alternative A would have a negligible short-term to minor long-term adverse impact to archaeological sites and ethnographic resources resulting from wildland fires and suppression actions, absent mitigation. Historic structures and cultural landscapes would be impacted from fire and suppression actions ranging from negligible short-term to direct long-term moderate adverse, if structures were lost to fire. There would be no major adverse impact or impairment of cultural resources whose conservation is necessary to legislated purposes key to the cultural integrity of the Monument or identified as a management goal.

Impacts of the Preferred Alternative

Analysis. Under Alternative B, the use of prescribed fire and mechanical thinning to reduce hazardous fuels would lower the risk to cultural resources from extreme fire behavior, suppression operations and vegetation build-up. Until fuels are reduced, suppression actions around known or possible cultural resources would result in effects similar to Alternative A.

Archaeological Sites & Ethnographic Resources. An archeological survey, performed in 1997, concluded that sites would not be impacted by prescribed fire activities. Direct adverse impacts from thinning or herbicide application would be negligible to minor adverse. All slash burning would be located away from known resources or in surveyed areas. If new sites are discovered during planning or project implementation, work would be halted until documentation and mitigation could be completed in consultation with the SHPO.

The effect of proposed fuels treatments, including the use of herbicides, would be localized, and of moderate intensity over the long-term as rock structures and artifact scatter benefit from the removal of damaging vegetation, and a reduction in the risk of damage from fire suppression activities. Prescribed fire would be conducted in less sensitive areas and in areas where manual thinning has reduced fuel density so that low intensity burns would be controlled.

Ethnographic resources would be protected through sensitive planning and consultation with tribes and SHPO. Moderate benefits from proposed fuels mitigation, herbicide treatments, and restoration of fire as an ecological process would occur over the short and long term; as vistas, landscape scenes, and other ethnographic values would be enhanced and protected by fire management activities.

Historic Structures & Cultural Landscapes. Reducing hazardous fuels and herbicide application around Mission 66 period buildings and landscape features would not affect their potential eligibility for National Register listing. Long-term impacts would be localized, beneficial, indirect, and of moderate intensity as fuels are reduced and resources are afforded protection from wildland fire.

Cumulative Effects. When considered with past, present, and future activities, cumulative effects on cultural and ethnographic resources from implementing the preferred alternative would be negligible.

Section 106 Summary & Conclusion.

Section 106 consultation was initiated with the New Mexico State Historic Preservation Officer during the external scoping for the development of the FMP/EA. The completed EA will be sent to the NMSHPO for review and comment which would partially complete Section 106 compliance. Government-to-government consultation with American Indian tribes was initiated to ensure no adverse impacts to ethnographic resources and values (see list of recipients in the *Consultation/Coordination* section.)

This EA analyzed the potential impacts associated with implementation of two alternatives (including a no-action alternative,) and described the reason for choosing the preferred alternative. A pre-burn cultural resources survey was conducted in 1997. The EA proposed mitigation measures to avoid adverse effects on cultural resources. The adaptive management approach proposed in Alternative B commits the NPS to continued consultation with interested tribes, stakeholders, and the NMSHPO. Pursuant to 36CFR800.5 (revised in January 2001, these regulations implement the National Historic Preservation Act and address the criteria of effect and adverse effect,) the NPS finds that implementation of projects and mitigation measures in the FMP for Capulin Volcano National Monument would not result in adverse effects to archeological, historic, ethnographic or cultural landscape resources eligible for or listed on the National Register of Historic Places.

In the short-term, actions proposed under Alternative B would have negligible or no effect on historic structures, cultural landscapes and other cultural resources. Long-term, beneficial impacts of moderate, indirect, localized intensity would be expected. Ethnographic resources

would benefit indirectly over the long-term to a moderate level as scenes are restored. Because there would be no major adverse impacts to cultural resources whose conservation is necessary to fulfill specific purposes identified in the establishing legislation for Capulin Volcano NM, key to the cultural integrity of the Monument, or identified as a management goal, there would be no impairment to the Monument cultural resources or traditional use features.

Impact Topic: PUBLIC HEALTH & SAFETY

Affected Environment. Three rural communities within a 15-mile radius of the Monument include: the town of Des Moines, population less than 200 people; and the villages of Capulin and Folsom, each with less than 100 people. Local populations have been in decline over the past 20 years. Each community is served by volunteer fire and ambulance departments. The nearest residences are single family ranches located one-mile west and two-miles south of the Monument. Public safety services include the sheriff departments for Union and Colfax counties; plus New Mexico State Police District 13. Surrounding public lands include Sugarite State Park forty miles to the west; State Lands of the Cimarron District 80 miles to the southwest; and USFS-Kiowa National Grassland 50 miles east.

Land adjacent to the Monument is owned privately and by the State of New Mexico. Most of the State Trust Land is leased for cattle grazing, which is the principal use of land in this region. Mineral rights are retained by the state. Some cinder mining occurs adjacent to the Monument and within the scenic viewshed of the Monument.

Visitor use is highest during the summer months. About half of the annual visitation occurs June through August. One-quarter of all yearly visits take place in July. While the number of visitors has fluctuated over the past 5 years from 65,000 to 70,000, the seasonal pattern is unchanged.

Opportunities for visitors and neighbors to escape a large, fast-moving fire may be limited by the terrain and the Monument road system. The narrow two-lane Volcano Road ends at the mountain summit. There are no road shoulders and only one vehicle pullout, which makes turning a vehicle around difficult. A stone wall retains the slope along the downhill traffic lane, and is 10 to 12 feet high in places. Dense pinyon-juniper vegetation grows below the road next to the uphill traffic lane. Steep slopes, loose cinders, and deep erosion gullies are just a few of the hazards. Weather is often more severe at the summit, and wind gusts in excess of 60 mph are not uncommon. Lightning strikes occur more often in the crater area than elsewhere in the Monument (National Park Service 1996.)

Annual wildland fire safety training is mandatory for all firefighting employees. Temporary employees have the opportunity to complete fire training in addition to an orientation to basic operations. During the fire season, a roster of personnel qualifications and availability is maintained. Each employee qualified for fire duty will have PPE (personal protective equipment) and initial attack gear available for immediate use. Increased fire detection patrols are conducted by Monument personnel during periods of very high to extreme fire danger.

The number of employees at Capulin Volcano National Monument varies seasonally. There are 10 permanent employees with additional 3-5 temporary employees during the summer. There are

three government owned houses in the park. Two employees, the chief ranger and chief of maintenance, occupy government quarters as a requirement of their positions.

Employees and visitors are at risk when wildland fire threatens the Monument. Firefighters face direct risks. Fire danger is usually most severe and safety risks peak in the late spring and early summer, before the summer monsoon season. Employees are responsible for directing visitors appropriately when wildland fire threats become severe. This could include closing part or all of the Monument or evacuating nearby residential communities.

Regulations and Policies.

| Desired Condition | Source |
|---|--|
| Visitor and employee safety and health are protected. | NPS Management Policies, National Environmental Policy Act |

Impacts of the No-Action Alternative

Analysis. Under Alternative A, the full suppression of wildland fire and removal of hazardous fuels in specific areas would continue to ensure the health and safety of park visitors, staff, and the surrounding communities. If fuels should continue to accumulate, however, safety impacts would be directly related to fire behavior and location. Current management practices would generally result in minor to moderate, short-term adverse impacts to public health and safety under extreme wildfire conditions.

Cumulative Effects. Cumulative impacts would result from Monument operations plus continued fire suppression policies within the Monument and on adjoining lands. Risk management prior to suppression operations and fuel treatment projects would keep the adverse health and safety impacts at negligible levels.

Conclusion. The No-action Alternative would result in negligible to minor short-term adverse impacts, which have the potential to reach moderate intensity, if severe wildland fire were to threaten visitor, local residents, and employees.

Impacts of the Preferred Alternative

Analysis. Under Alternative B, fuel reduction and use of prescribed fire would over time reduce the chance of extreme fire behavior. This would result in a long-term, indirect, beneficial impact to local health and safety, since the possibility of more severe impacts due to unplanned fire and suppression efforts would be substantially reduced. The use of prescribed fire and slash pile burns, application of herbicides, and use of chainsaws or other equipment in thinning operations would occur under controlled conditions. Health and safety pre-planning would result in negligible or minor adverse short-term impacts that are localized with few off-site health concerns. Permits and public notification would occur and projects would be scheduled for low visitor use periods, whenever possible. The direct, ground-level application of herbicides on cheatgrass would occur on windless days to minimize transport through the air, and therefore, have a negligible short-term effect on public health. IPM guidelines prescribe for signage and public notification when herbicide application occurs. Under extreme fire conditions, such as

high winds and low fuel moisture, the short-term adverse effects would be similar to those in Alternative A.

Cumulative Effects. Activities considered in the cumulative effects analysis include safety risks associated with visitor use and park operations, as well as land use activities such as ranching or mining immediately adjacent to Capulin Volcano. The long-term beneficial effect would result of these activities on human health and safety would be a cumulative beneficial impact.

Conclusion. Short-term effects of the preferred alternative would be similar to Alternative A. However, beneficial, localized, direct effects of minor to moderate intensity would occur from the accomplishment of objectives under a fuels treatment schedule contained in a FMP.

Impact Topic: SOCIOECONOMICS

Affected Environment. Northeast New Mexico is a region of large ranches, and rural communities. Capulin Volcano National Monument is located in Union County. The county seat and largest town and is Clayton, with 2,524 people (US Census 2000.) Other recreation and tourism attractions include sites along the Santa Fe National Historic Trail, Dry Cimarron Scenic Byway, Clayton Lake State Park, and the Kiowa National Grasslands. The Folsom Man Site, a New Mexico State Monument, is the location of the archeological discovery ca. 8,000 BC. The site is named for the nearby village of Folsom, population 73, eight miles north of Capulin Volcano. Three miles south of the Monument, the village of Capulin, population under 100, has a restaurant and convenience store, gas station, post office, and commercial campground. The economy includes ranching, mining, camping, hunting, tourism, and recreation. From the latest information, Union County gross receipts (1994) totaled \$20,334.00. Union County average per capita income is listed as just over \$17,000(source: <http://nenewmexico.com/counties/union.com>)

The NPS provides some seasonal employment opportunities, but there are no dedicated funds for firefighter positions. Temporary firefighters can be detailed from other agencies during periods of extreme fire danger. Local opportunity for employment in fire management or firefighting remains sporadic. Most firefighter and support jobs are of short duration and are tied to fire severity.

Over the past five years visitation at Capulin Volcano National Monument has ranged from 60,000 to just under 70,000 visitors. Capulin Volcano is a day-use area and the average length of stay is two hours. Visitor activities consist mainly of driving the 2-mile Volcano Road, sightseeing, hiking three short trails, and using the picnic area.

Regulations and Policies.

| Desired Condition | Source |
|--|-------------------------------|
| The NPS will work cooperatively with others to improve the condition of parks; to enhance public service; and to integrate parks into sustainable ecological, cultural, and socioeconomic systems. | NPS Management Policies 2001. |

Impacts of the No-Action Alternative

Analysis. Without a FMP, employment opportunities for local firefighter and support personnel as well as local businesses would remain sporadic and seasonal. Employment would be primarily for suppression-related activities. During wildland fire suppression operations, an influx of firefighters would need temporary housing, food and supplies, with direct short-term benefit for local businesses. However, the Monument could close and public access limited in the surrounding area so that minor short-term, indirect adverse impacts on local socioeconomic conditions may result from the loss of tourism and recreation revenue.

Cumulative Effects. The past, present, and foreseeable future economic potential of the area, combined with opportunities presented by the No Action Alternative, would result in negligible cumulative effects to local socioeconomic conditions.

Conclusion. Short-term benefits to socioeconomic conditions during suppression operations would be negated by minor indirect adverse impacts from the loss of tourism and recreation revenue if the no-action alternative is continued. Long-term socioeconomic impacts would be negligible given the infrequent occurrence of wildland fire in the local area.

Impacts of the Preferred Alternative

Analysis. Based on the low number of past fires, long-term socioeconomic benefits from suppression actions would be negligible on local businesses (food service, lodging, hardware) as well as employment of firefighters. When fire conditions are extreme, there would be the short-term potential for direct minor benefits to local businesses and temporary employment. Implementation of prescribed fire and fuels management projects under a FMP presents increased opportunities for temporary employment of local contractors, firefighters, and support personnel. This would result in beneficial localized effects of minor intensity and of relatively long-term duration.

Cumulative Effects. The past, present, and foreseeable future economic potential of the area, combined with opportunities presented by the Preferred Alternative, would result in negligible to minor cumulative benefit to the local economy.

Conclusion. As projects in the FMP are funded and initiated, there would be direct benefits of long-term duration and minor intensity on seasonal employment and local businesses. Short-term benefits would be similar to those in Alternative A.

Impact Topic: COOPERATIVE RELATIONSHIPS

Affected Environment. Fire management objectives at Capulin Volcano National Monument can not be achieved without outside assistance. The NPS maintains cooperative relationships for fire protection with government agencies, such as New Mexico State Forestry and State Land Office, Union County, and local fire departments. Some of these relationships are not formalized by written agreement. There are cooperative agreements with three local fire departments to

administer Rural Fire Assistance grants for the purchase of wildland fire equipment and to provide training. The New Mexico State Land Office works with the Monument on thinning projects along shared boundaries. An interagency agreement is maintained for wildfire initial attack procedures with the Taos Zone Coordination Center. The annual zone operating plan identifies the closest firefighting resources and capabilities. The Monument will be a member of the Llano-Estado Fire Planning Unit with all federal and state agency fire fighting resources within unit boundaries. This planning unit combines firefighting resources on a larger scale than the present zone system. Local fire operations at Capulin Volcano are directed by the Monument's chief ranger, and the Fire Management Officer is stationed at Lake Meredith National Recreation Area in Fritch, Texas.

Regulations and Policies.

| Desired Condition | Source |
|--|-----------------------------------|
| Public participation in planning and decision-making will ensure that the Park Service fully understands and considers the public's interests in the parks, which are part of their national heritage, ethnographic resources, and community surroundings. The Service will actively seek out and consult with existing and potential visitors, neighbors, people with traditional cultural ties to park lands, scientists and scholars, concessionaires, cooperating associations, gateway communities, other partners, and government agencies. The Service will work cooperatively with others to improve the condition of parks; to enhance public service; and to integrate parks into sustainable ecological, cultural, and socioeconomic systems. | NPS Management Policies |
| In the spirit of partnership, the Service will also seek opportunities for cooperative management agreements with state or local agencies that will allow for more effective and efficient management of the parks, as authorized by §802 of the National Parks Omnibus Management Act of 1998. | NPS Management Policies |
| Possible conflicts between the proposed action and land use plans, policies, or controls for the area concerned (including local, state or Indian tribe, and the extent to which the park will reconcile the conflict are identified in NPS environmental documents. | National Environmental Policy Act |

Impacts of the No-Action Alternative

Analysis. Under Alternative A, without the direction provided by a FMP, formalized agreements that would contribute to cooperative fire management and public education activities may not occur. The potential to cooperatively fund and develop local education programs about fire prevention and the ecosystem role of fire would be limited, and have an adverse, indirect impact of minor intensity over the long-term. The effects on relationships with neighbors and cooperators would be indirect, localized, adverse, long-term, and of minor intensity.

Cumulative Effects. Past cooperative relationships between the Monument and other agencies and landowners have been limited. Without an approved FMP, the opportunity to fund fuel management activities of mutual benefit would be slight. The cumulative effect on cooperative relationships is adverse, minor to moderate, and long-term, under Alternative A.

Conclusion. Without a FMP that directs and potentially funds fire management activities with local cooperators and neighbors, the no-action alternative would lead to adverse and localized effects of long-term duration and of minor intensity on cooperative relationships.

Impacts of the Preferred Alternative

Analysis. Under the preferred alternative, the direction provided by an approved FMP would require a wider range of cooperative agreements and relationships, as compared to the no action alternative. The adaptive management approach taken in Alternative B would institute a process of continued consultation and communication as FMP projects are funded and implemented. Communication with adjacent agencies and landowners would be conducted when projects occur at or near their boundaries or there is an identified impact that could affect Monument neighbors. Direct assistance from the Fire Effects Monitoring/Fire Ecology Program at Bandelier National Monument, would provide for the monitoring and evaluating of fire management activities. This alternative would result in long-term moderate improvement of cooperative relationships from the adaptive management strategies used to achieve fire management objectives.

Cumulative Effects. Communication, cooperation, and collaboration with neighboring agencies and communities, Monument partners, visitors, residents, and employees will be an essential component of all FMP activities. In combination with activities in the preferred alternative, the cumulative effect would be moderate and beneficial.

Conclusion. Alternative B would result in moderate beneficial effects on cooperative relationships with neighbors and partners in the short- and long-term, as potential for increased resources and mutually beneficial opportunities are realized under an approved FMP.

CONSULTATION & COORDINATION

Internal Scoping

On November 2, 2002, an IDT meeting was convened to initiate a process related to the preparation of an environmental document in support of a wildland FMP. Park significance, legislative intent, park purpose and mission statement were discussed in the meeting. At that time, the IDT developed the purpose and need statement, goals and objectives, issues, and proposed alternatives related to the FMP.

Agencies/Tribes/Organizations/Individuals Contacted

Public notification and scoping included the January 2003 distribution of a press release to media contacts and newsletter mailed to over 300 individuals, organizations, government agencies and tribes. The New Mexico State Historic Preservation Office and U.S. Fish and Wildlife Service received these notices. The newsletter outlined the EA purpose, fire management goals and objectives, and solicited public input on issues, concerns, and potential alternatives. A public meeting was held at the Monument on February 1, 2003. Another letter mailed to interested stakeholders on August 15, 2003, invited comments on the use of herbicides to mitigate cheatgrass that might potentially emerge after a wildland or prescribed fire. The issues and concerns raised by this process are summarized on page 9.

Preparers & Principal Contributors

| <i>Name</i> | <i>Role on Project</i> | <i>Title</i> | <i>Office</i> |
|-------------------|-------------------------------------|-------------------------------|--|
| Margaret Johnston | Park Info and Contributing Author | Superintendent | Capulin Volcano NM |
| Brian Quigley | Resources and Contributing Author | Chief Ranger | Capulin Volcano NM |
| Doug Enders | Maintenance | Chief of Maintenance | Capulin Volcano NM |
| Bruce Robinson | Natural Resources | Biological Technician | Capulin Volcano NM |
| Eva Long | Compliance, NPS Project Coordinator | Compliance Specialist | Intermountain Regional Office – Denver |
| Mike Davin | Fire Management | Fire Management Officer | Lake Meredith National Recreation Area |
| Stephen Fisher | Geographic Information System | GIS Specialist | Lake Meredith National Recreation Area |
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| Lisa Hanson | NPS Project Coordinator | Compliance Specialist | Intermountain Regional Office – Denver |
| Cathy Spude | Cultural Resource Consultation | Archeologist | Intermountain Regional Office – Santa Fe |
| Cristy Brown | Local History | Park Guide | Capulin Volcano NM |
| Dana Bishop | Orientation | Resource Ass't (SCA) | Capulin Volcano NM |

List of EA Recipients

Over 300 names and addresses of individuals, organizations and federal or tribal government agencies will be notified of the availability of this document. The address list is available at the Capulin Volcano NM Headquarters, P.O. Box 40, Capulin, NM 88414. Copies of the EA will be available at the Monument Visitor Center and at the Internet address: www.nps.gov/cavo. Press releases will be distributed to local media sources.

All comments received during the public review period will be assessed by the NPS. Should substantive comments be received, the NPS would decide whether to rewrite this document or prepare an environmental impact statement.

The following agencies, tribes, and organizations will receive a copy of this EA.

Federal Agencies

US Fish and Wildlife Service, Ecological Services, Albuquerque, New Mexico
USDA, Natural Resource Conservation Service
NPS, Bandelier National Monument
USDA, Kiowa National Grasslands

Tribal Governments

All-Indian Pueblo Council
Apache Tribe of Oklahoma
Cheyenne-Arapaho Business Committee
Commanche Tribe of Oklahoma
Eight Northern Indian Pueblo Council
Jicarilla Apache Nation
Mescalero Apache Tribe
Southern Ute Tribe
Taos Pueblo Tribal Government
Ute Mountain Ute Tribe
Wichita and Affiliated Tribes

New Mexico State Agencies

Department of Game and Fish
Historic Preservation Office
Environment Department – Air Quality Division
Energy, Minerals, & Natural Resources Department – Forestry Division
State Land Office

Local Agencies

Union County, NM Commissioners
Union County Soil Conservation District
Colfax County, NM Commissioners

Organizations

Jicarilla Apache Cultural Center
Northeast New Mexico BioMass, Ltd.
Carson Forest Watch
Des Moines Volunteer Fire Department, Des Moines, New Mexico
Folsom Volunteer Fire Department, Folsom, New Mexico
Capulin Volunteer Fire Department, Capulin, New Mexico

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Appendix - GLOSSARY

This section contains a list of definitions found in the Wildland and Prescribed Fire Management Policy, Implementation Procedures Reference Guide. (NIFC, Boise, ID, June 1998.)

Appropriate Management Response. Specific actions are taken in response to a wildland fire to implement protection and fire-use objectives.

Fire Management Plan (FMP). A strategic plan that defines a program to manage wildland and prescribed fires. The FMP documents activities in the approved land-use plan. The plan is supplemented by operational plans such as preparedness plans, preplanned dispatch, prescribed fire plans, and prevention plans.

Fire Management Unit (FMU). Any land management area definable by objectives, topographic features, access, values to be protected, political boundaries, fuel types, or major fire regimes, that set it apart from management characteristics of an adjacent unit. FMUs are delineated in fire management plans or FMPs. These units may have dominant management objectives and preselected strategies to accomplish these objectives.

Initial Attack. An aggressive suppression action consistent with firefighter and public safety and values to be protected.

Manual Fuels Reduction (or Treatment). Manipulation or removal of fuels to reduce the likelihood of ignition and/or lessen damage and resistance to control. Methods include, but are not limited to, lopping, piling and burning, thinning, and hand removal.

Mechanical Fuels Treatment. Manipulation or removal of fuels with machinery to reduce the likelihood of ignition and/or lessen potential damage and resistance to control. Methods include, but are not limited to chipping, felling, limbing, crushing, lopping, and removing.

Minimum Impact Management Techniques (MIMT). The application of strategy and tactics that effectively meet suppression fire use, and objectives with the least environmental, cultural, and social impacts.

Mitigation Actions. Actions taken with the objective of reducing impacts. Mitigating actions may be:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Preparedness. Activities that build a safe, efficient, and cost-effective fire management program and that support management objectives through appropriate planning and coordination.

Prescribed Fire. Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met before ignition.

Prescription. Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Values to Be Protected. Include property, structures, physical improvements, natural and cultural resources, community infrastructure, and economic, environmental, and social values.

Wildland Fire. Any non-structure fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously called both wildland fires and prescribed natural fires.

Wildland Fire Suppression. An appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration but minimize the loss of resource values, economic expenditures, and/or the use of critical firefighting resources.

Appendix A: FIVE-YEAR TREATMENT SCHEDULE

| State | Region | WUI or HF | Fiscal Year | Project Name | Activity Type | Treat Type | NEPA | Target Acres | Notes |
|-------|--------|-----------|-------------|--------------------------|---------------|------------|-----------------|--------------|---|
| NM | IMR | WUI | FY05 | Grassland Restoration RX | Treatment | Fire | Within FMP NEPA | 50 | On the flats |
| NM | IMR | WUI | FY05 | Volcano Slopes Thinning | Treatment | Mechanical | Within FMP NEPA | 20 | On the volcano |
| NM | IMR | WUI | FY06 | Grassland Restoration RX | Treatment | Fire | Within FMP NEPA | 100 | On the flats |
| NM | IMR | WUI | FY06 | Volcano Slopes Thinning | Treatment | Mechanical | Within FMP NEPA | 80 | On the volcano |
| NM | IMR | WUI | FY07 | Grassland Restoration RX | Treatment | Fire | Within FMP NEPA | 100 | On the flats |
| NM | IMR | WUI | FY07 | Volcano Slopes Thinning | Treatment | Mechanical | Within FMP NEPA | 100 | On the volcano |
| NM | IMR | WUI | FY08 | Grassland Restoration RX | Treatment | Fire | Within FMP NEPA | 100 | On the flats |
| NM | IMR | WUI | FY08 | Volcano Slopes Thinning | Treatment | Mechanical | Within FMP NEPA | 300 | On the volcano |
| NM | IMR | WUI | FY09 | Volcano Crater RX | Treatment | Fire | Within FMP NEPA | 25 | On the volcano |
| NM | IMR | WUI | FY10 | Volcano Slopes RX | Treatment | Fire | Within FMP NEPA | 100 | Volcano slopes continue to be burned at approx. 100 acres per year from FY10 on until the entire volcano is treated; after that the entire park will have received initial treatment; maintenance burns will occur of 50-100 acres per year, depending on factors such as drought, condition assessment, and fuel reduction needs, as determined by ecological/monitoring staff and park management |
| | | | | | | | | | |